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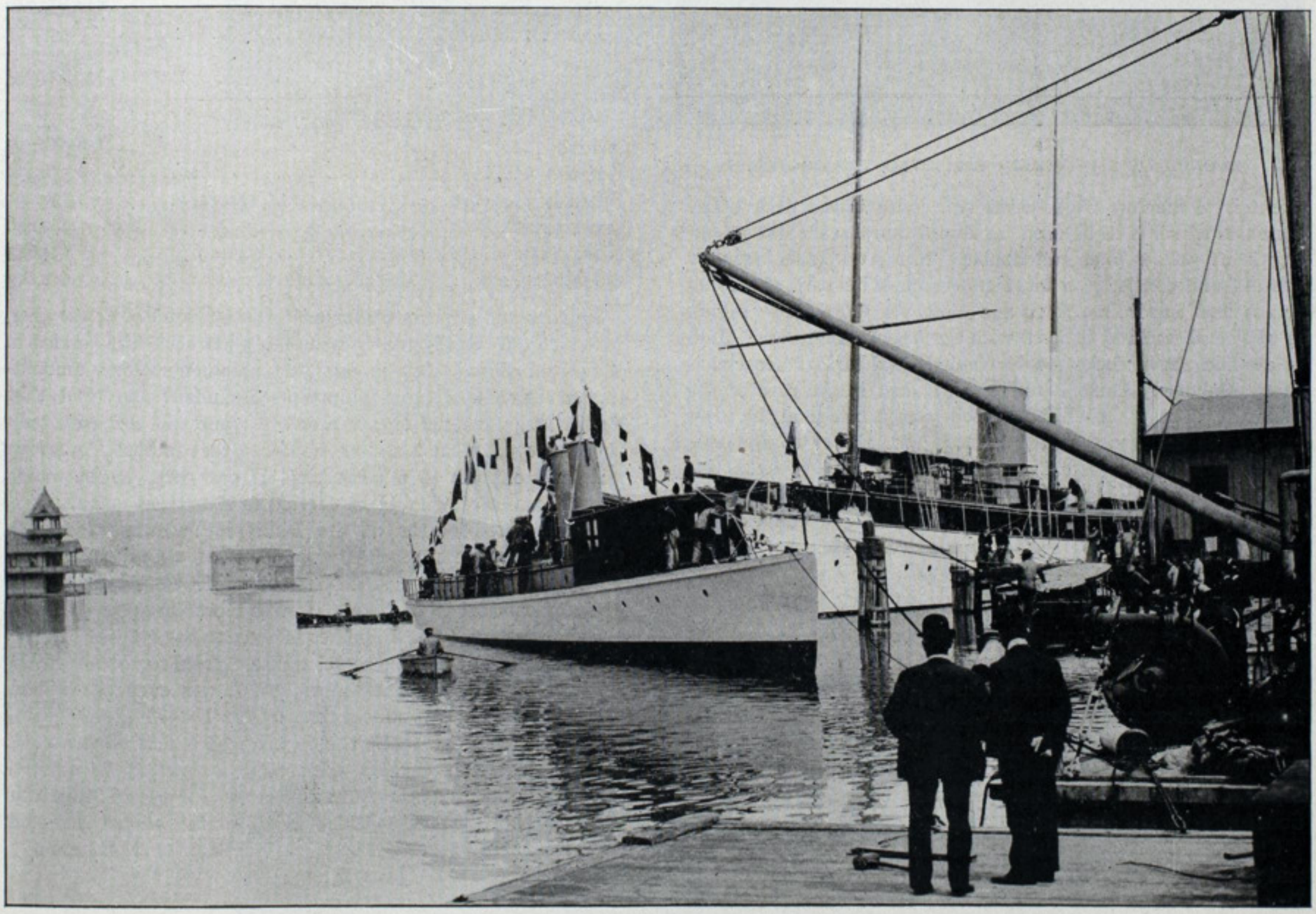
LAUNCH OF THE VIXEN.

John D. Archbold's new twin-screw steam yacht, the Vixen II., was launched at the works of the Gas Engine & Power Co. and Charles L. Seabury & Co., Morris Heights, recently. The launching was very successful and was witnessed by a large number of friends of the owner. Miss Annie Archbold christened the vessel. Among the others at the yard were: Mr. and Mrs. J. J. Amory, Mrs. C. L. Seabury, Miss M. Seabury, Mr. Geer, Lieut. Osborn, United States navy, and Mrs. Osborn, United States Naval Constructor Fernald and Naval Machinery Inspector McAllister. Mr. Archbold expressed much satisfaction with the appearance of the yacht. It is the second vessel of the name built for him by the Seabury company, and is larger than the first, while she will have increased machinery power and be much faster. The new boat will use oil as fuel, it being the desire of Mr. Archbold to demonstrate, if possible, the advantage of oil over coal for yacht service. The boilers will be operated by oil fuel

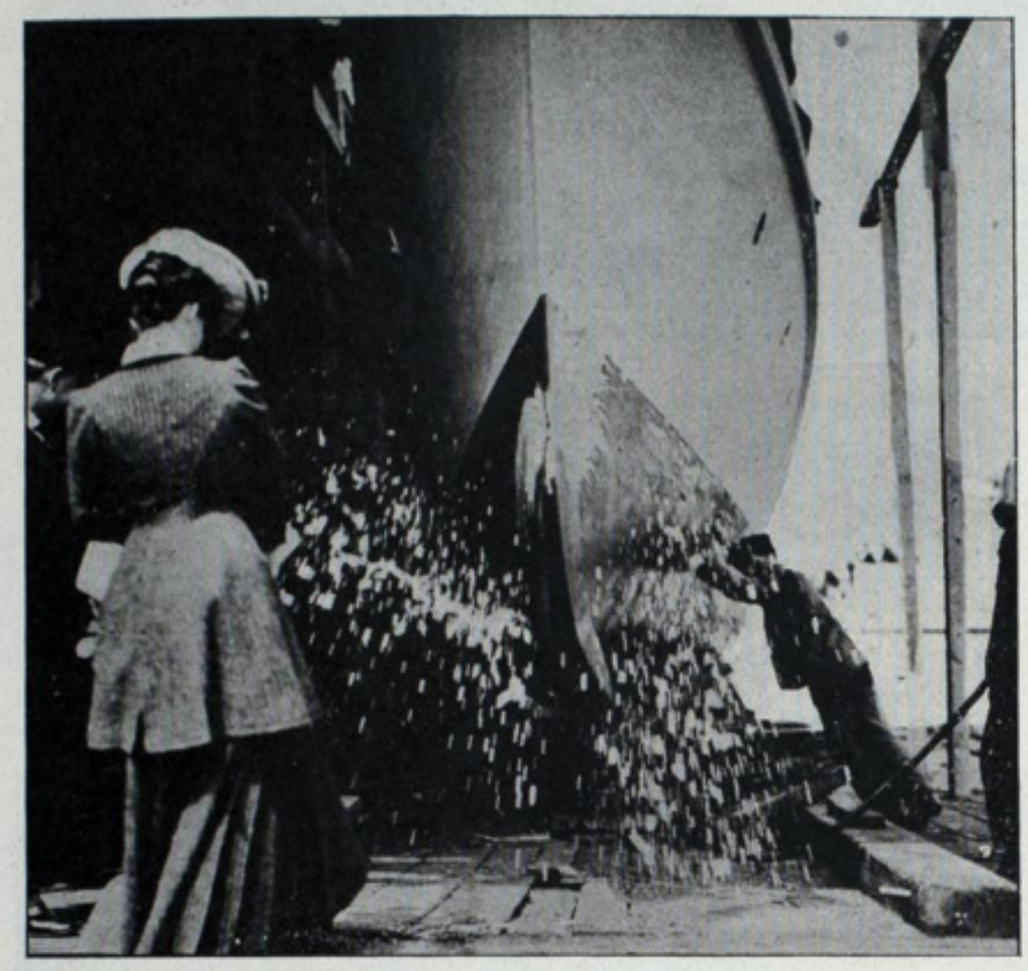


THE VIXEN IN THE WATER.

[*Built by the Gas Engine & Power Co. and Charles L. Seabury & Co., Consolidated, Morris Heights, N. Y.*

under pressure, an air system generated by a turbine being utilized for the spray. Mr. Archbold has been using the first Vixen, which was built in 1892, with coal burning boilers, and she has attained a speed of 22 miles an hour. The speed of the new boat is guaranteed to be 24 miles an hour.

The Vixen II. is 118 ft. over all, 114 ft. on the water line, and draws about 4 ft. 6 in. She is fitted with twin screw triple-expansion engines and the latest design boiler. The



LAUNCH OF THE VIXEN—SMASHING THE BOTTLE.

yacht is of the low trunk cabin type, with raised deck house forward, which is to be used for dining purposes. Her planking is of yellow pine and double. Mr. Archbold's quarters are aft, and consist of a large stateroom, with bath and toilet rooms and wardrobes, linen and clothes lockers. The saloon is of liberal size and is fitted with berths on either side. Both below and above decks the furnishings and fittings are elaborate. Mahogany finish is universal, except in the case of the teak rail. The yacht will be steered from a bridge at the after end of the deckhouse, which is large enough for comfortable seats for the owner and his guests. The crew's quarters are forward and well ventilated and lighted. The galley is forward of the engine compartment bulkhead and conveniently arranged for the dining service in the deckhouse.

BIDS FOR STATEN ISLAND FERRY BOATS.

Bids for the new Staten Island ferry boats were opened last week at the office of the dock commissioner at New York. The bids were in two classes, class X calling for the installation of Babcock & Wilcox or Niclausse boilers and Class Y calling for Mosher, Hohenstein or Seabury boilers. Five ferry boats are to be built in all. The bids received were as follows, the first amount being for one boat and each additional amount for succeeding boats.

Class X.—Harlan & Hollingsworth Co., $362,000, $241,000 and $331,500; Bath Iron Works, $355,900 and $347,000; Burlee Dry Dock Co., $345,000 and $341,000; H. F. Palmer, $352,000 and $347,000; Eastern Ship Building Co., $350,000 and $345,000; W. & A. Fletcher Co., $365,000 and $346,300; William Cramp & Son, $350,000 and $340,000, and Maryland Steel Co., $365,500 and $349,200, $341,700, $327,600, and $325,000.

Class Y.—Harlan & Hollingsworth Co., $341,000, $320,000, and $312,000; Bath Iron Works, $340,100 and $332,100; Burlee Dry Dock Co., $335,000 and $329,000; H. F. Palmer, $338,000 and $333,000; Eastern Ship Building Co., $335,245 and $326,245; W. & A. Fletcher Co., $365,000 and $346,300; William Cramp & Son, $340,000 and $330,000, and Maryland Steel Co., $351,500, $337,000, $319,000, and $317,000.

AMERICAN SHIPS WANTED.

The outside commerce of the Philippine islands for the calendar year 1903 was as follows:

Imports—	
Merchandise	$33,811,384
Gold and silver	1,454,205
Total imports	$35,265,589

The flags carrying these imports were:

British	$14,958,254
German	7,822,379
Spanish	5,581,079
Norwegian	2,019,460
American, only	1,505,428
All other	3,378,989

That showing for American ships is bad enough but it is not all of the humiliating and unprofitable story.

Turning to the record of exports from the Philippines in 1903, we find:

Exports—	
Merchandise	$32,396,746
Gold and silver	7,557,887
Total exports	$39,954,633

Carried by the following flags:

British	$28,984,203
German	2,536,154
Spanish	2,157,464
American	1,980,086
Norwegian	754,613
All other	3,542,113

Imports and exports combined formed a total of $75,210,222, of which only $3,485,514, or less than 5 per cent. was carried in American ships. Taking our 1903 shipments alone, amounting to $4,118,660 (coin shipments included), we find that British ships carried 60 per cent. Anyone can see, with only "half an eye," what a serious handicap that is upon American mainland exports to a possession of our own, whose entire outside commerce should be carried in American vessels.

Nearly three-fourths of the Philippine return trade with the United States reached the ports of the mainland on British vessels. That is dead wrong. However, there is a grain of comfort to be noted. It was worse in 1902. Though our shipments to the Philippines in 1903, $3,837,100, were $316,074 less than in 1902, the merchandise carried to the islands in American bottoms doubled in value. It was even better than that on Philippine products sent to the United States. But, with these improvements, the fact remains that 88 per cent. of the American cargoes each way is carried in foreign ships, while not a single American vessel for use in American overseas trade is under construction in the almost deserted American ship yards.

WALTER J. BALLARD.

Schnectady, N. Y., June 13, 1904.

The Goodrich liner Iowa ran into the steamer Abbey, while leaving Muskegon harbor last week. The Iowa immediately went to the relief of the Abbey and towed her into shallow water in the harbor where she sank.

The steamer Joliet of the Pittsburg Steamship Co.'s fleet delivered a cargo of ore at Conneaut last week, which was the first cargo to be received this season.

*Hydraulic Dredge J. Israel Tarte.

By A. W. ROBINSON.

The hydraulic dredge J. Israel Tarte, designed by A. W. Robinson and built by the Polson Iron Works, Toronto, Ont., for service in Lake St. Peter, the St. Lawrence river, was designed to fulfil the following conditions:

1. It must be able to make a cut 700 ft. wide at one time and 5 ft. to 10 ft. thick at one cut.

2. It must leave a clean and level bottom and cut mechanically the entire area, as the material is blue clay and will not run or wash like sand.

3. It must deliver the material sufficiently far to one side of the channel to avoid any risk of washing back again.

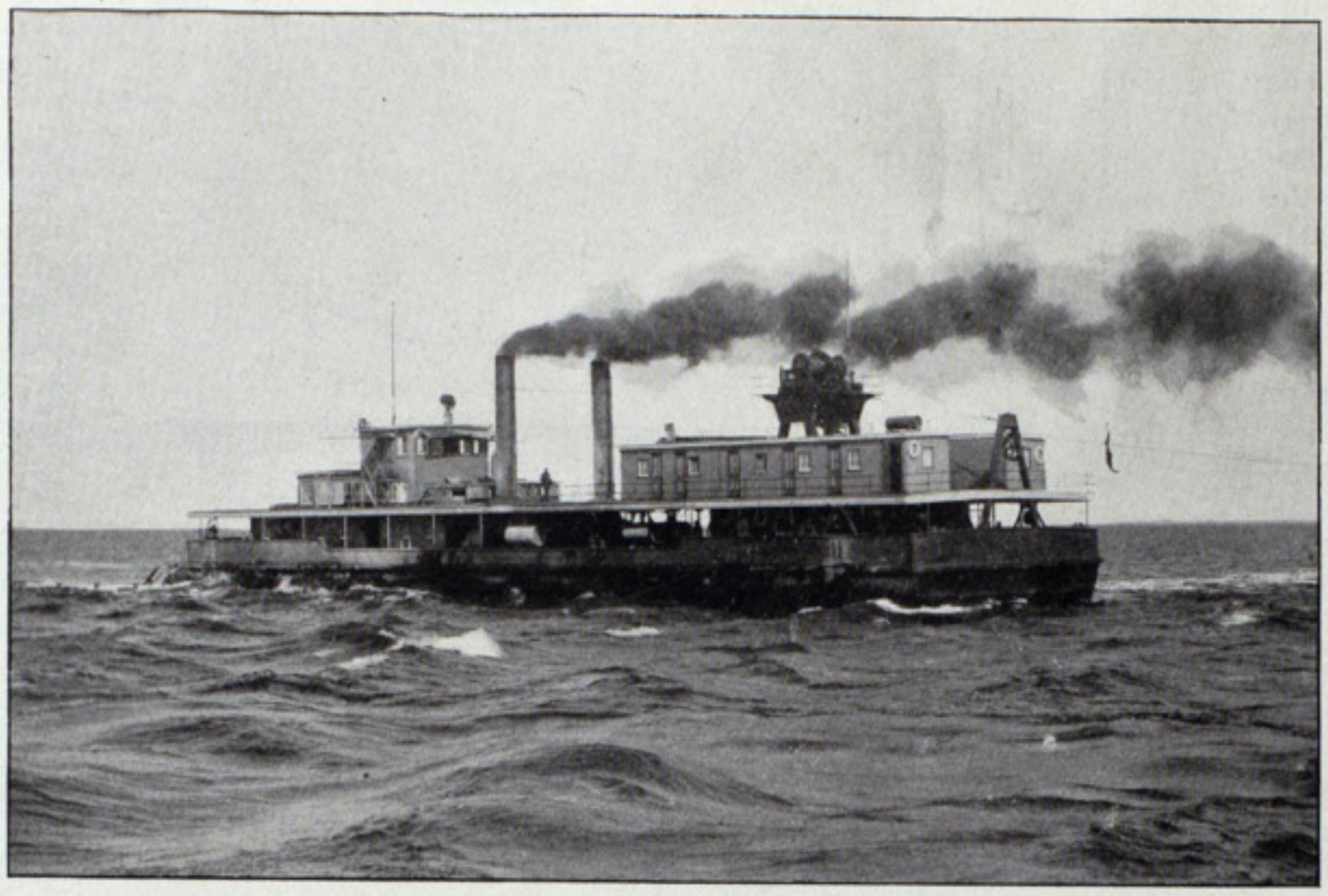
4. The floating pipe line must be so arranged that it will freely permit of the movements of the dredge, and that it will withstand the winds and waves due to the locality, and which are severe at times.

5. The dredge must be so worked that it will not obstruct the channel for passing ships.

6. The anchorage and movements of the dredge must be so arranged that the feed will be continuous and uniform.

7. The capacity to be a working rate of 2,000 cu. yards per hour.

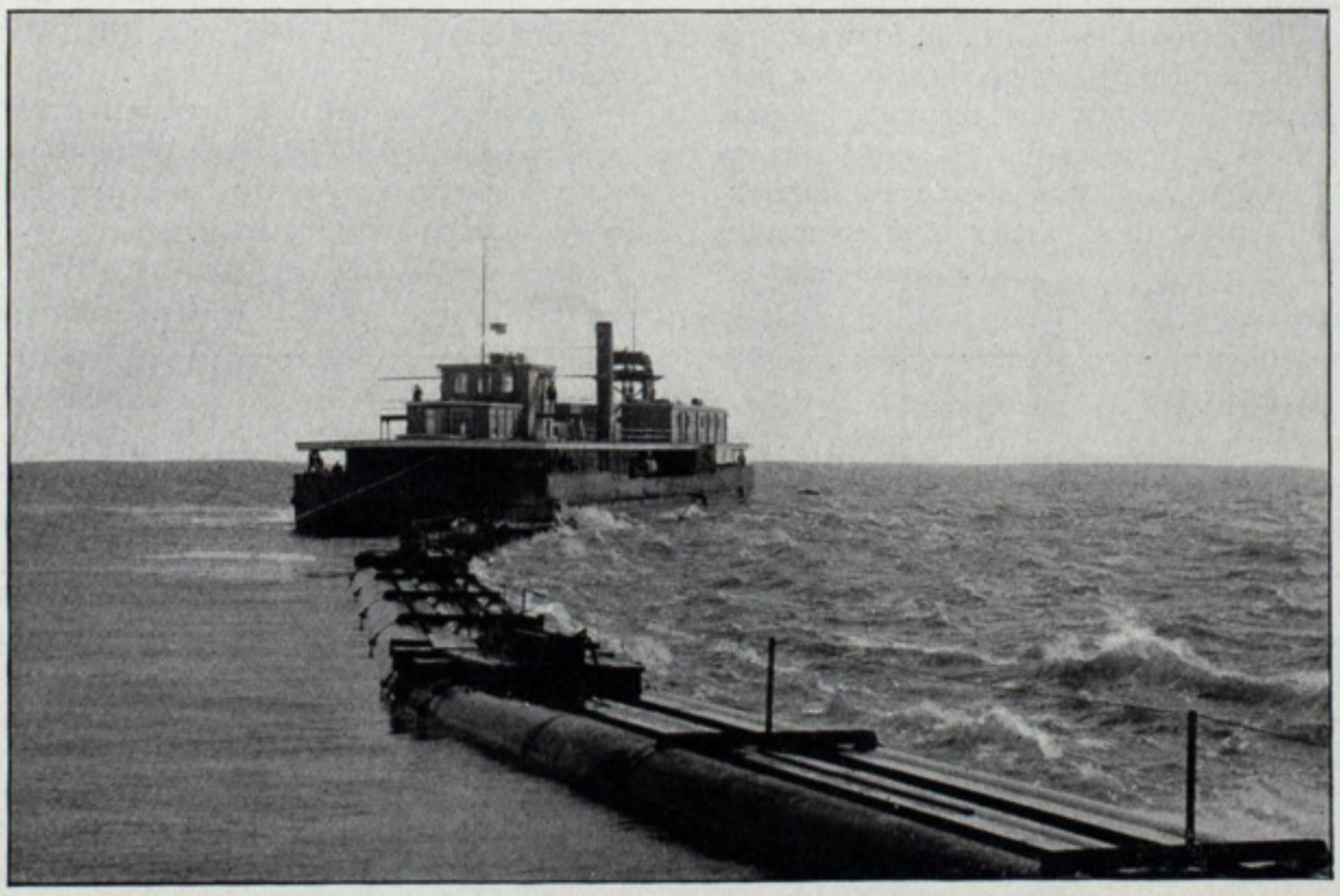
8. The dredge must have ample coal supply and provisions for a double crew.



DREDGE J. ISRAEL TARTE AT WORK

The clay in which it was designed to work is of a soft, unctous nature, sometimes partly silicious, bluish in color and of a character suitable for brick-making, or pottery. It dumps well from the buckets of a ladder dredge and slides readily down the chute into the barges in chunks, frequently the whole size of the bucket and showing the markings of the rivets. The problem in the new hydraulic dredge, therefore, was to cut this clay regularly and uniformly and feed it into the mouth of the suction pipe without clogging. Once there, it would slide freely along and be discharged without difficulty, and by making the pipe of large diameter and the pump with passages of large section, the clay could go through in lumps even more readily than sand or finely divided material of like nature, which would tend to precipitate. Thus the hydraulic apparatus is used, not for dredging, but for purposes of transportation only.

In considering the question of capacity, the dredge was designed to have a theoretical rate of 3,000 cu. yds. per hour, and it was deemed that this would be sufficient to give a working rate of 2,000 yards per hour, including the delays incident to regular work, but not counting delays from exceptional causes, storms or repairs. This rate required a section of cut 5 ft. by 6 ft. by a feed of 45 ft. per minute, equal to 3,000 cu. yards per hour. It was, therefore, necessary to provide a cutter capable of dealing with that section and with plenty of margin to spare, and to provide means of feeding it 450 to 700 ft. across the channel at the required rate. As this involved traversing the entire dredge broadside at that rate, and dragging the semi-submerged pipe line after it, the power required for this purpose would be quite large, and produce a corresponding necessity of providing strong anchorage to the mooring lines, by which the traversing movement was to be effected.

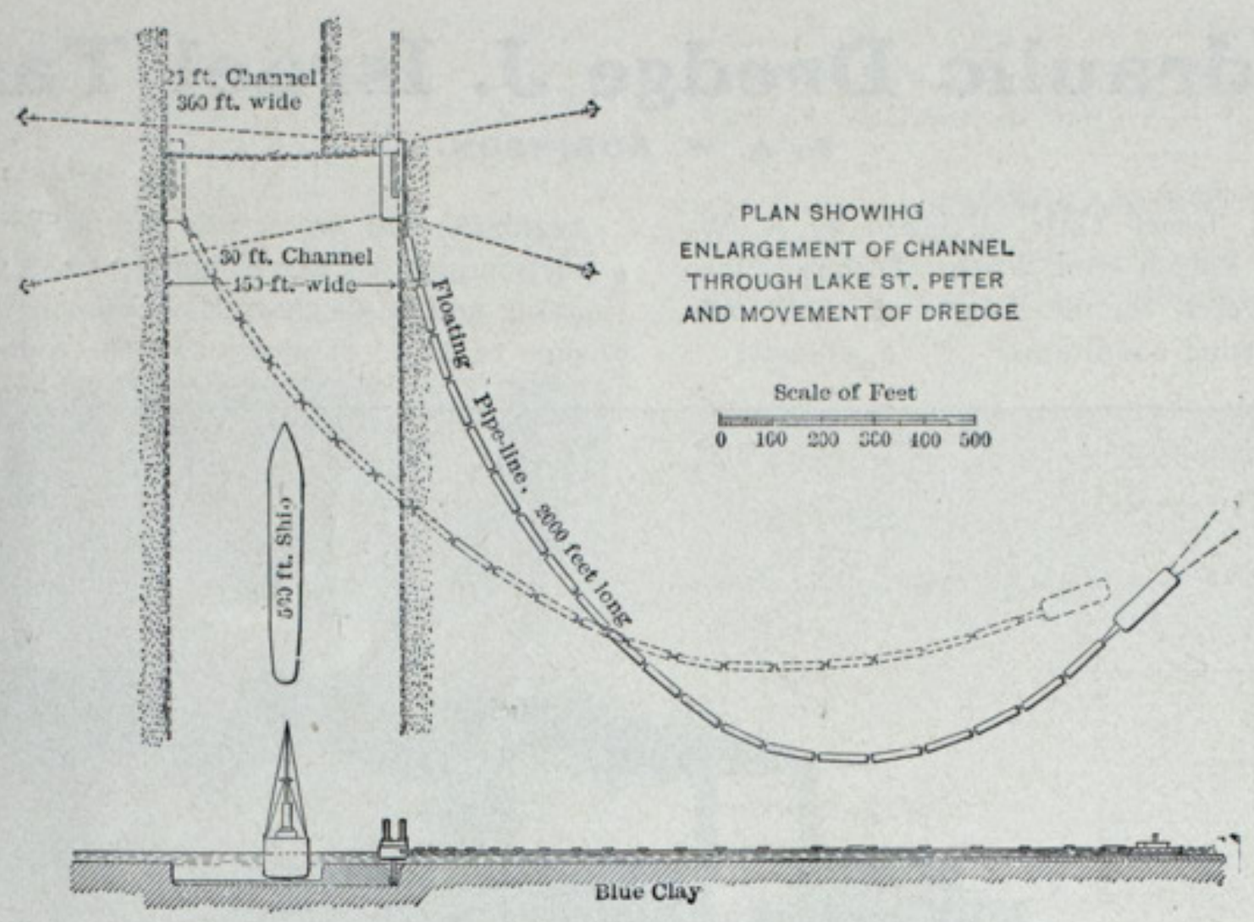


VIEW OF DREDGE SHOWING PIPE LINE

In considering the movement of the pipe-line attached to the dredge, advantage was taken of the fact that there is a more or less constant current of ½ to ¾ mile per hour in the lake. This is due to the discharge of the river, and is modified by winds

*Paper prepared for Canadian Society of Civil Engineers.

and sometimes by tides to a scarcely appreciable extent. The tidal variation at Quebec, 110 miles below, is 9 to 15 ft., but this gradually becomes less on ascending the river until it becomes lost at the lower end of the lake. The current, therefore, causes the pipe line to assume a catenary curve of varying tightness according to the travel of the dredge. This is shown by Fig. 2, which is a diagram showing the movement of the dredge and the relative position of the pipe line.

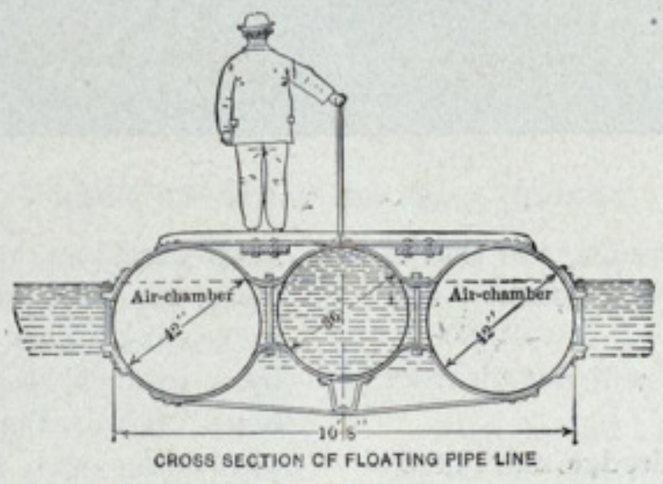


PLAN SHOWIHG ENLARGEMENT OF CHANNEL THROUGH LAKE ST. PETER AND MOVEMENT OF DREDGE

Scale of Feet
0 100 200 300 400 500

FIG. 2.

The current, therefore, was employed to deflect the pipe line to the form of a loop having slack enough to permit the dredge to traverse 450 ft. In order to utilize the current for this purpose, and at the same time render the pipe line less exposed to the wind and waves, it was designed to be two-thirds submerged. The weight of a large steel pipe filled with water and mud is very great and would require very large pontoons to carry it in the air, but by partially submerging it the buoyant power required is much reduced.



CROSS SECTION OF FLOATING PIPE LINE

FIG. 3.

The form of pipe line adopted is that of a central conduit, 36 in. diameter, carried by two cylindrical pontoons or air chambers 42 in. diameter, the three being bound together by truss-frames clamped upon them as shown in Fig. 3. In this way no bolts or rivets are put into the air chambers, and they may be readily taken apart.

The pipes were made up in 100 ft. sections and four sections of 50 ft. were made with the idea of putting them in that part of the pipe where greater flexibility was required. It was found, however, that these 50-ft. pipes did not stand the sea as well as the 100-ft. sections, and that, moreover, sufficient flexibility could be had without them. They were accordingly joined together and converted into 100-ft. sections.

The joints connecting the 100-ft. sections were at first made by uniting them with a forged steel pin-connection over the rubber sleeve, thus relieving the rubber sleeve of all strain due to tension of the pipe and permitting the required angular movement. These joints were not strong enough and were found to be too rigid in wave action, and caused heavy strains to be set up, which broke some of the joints. They were temporarily repaired for the first season, and during the winter of 1902-3 new joints of special construction were devised by the writer, designed on the ball-and-socket plan to permit of universal movement to a moderate degree, and also fitted with the drawbar springs to absorb the variations of length due to surging and pitching. The ball-and-socket principle was embodied, not in the pipe itself, but in a strong steel frame above the pipe, which was connected by rubber sleeves in the usual way. This has proved entirely successful and the practical result is that the dredge is capable of continuing at work in all but the heaviest weather. The general construction of the pipe line and joints are illustrated in Figs. 3 and 4. The ball end of the joint is solidly riveted to the frames on the pipe, while the socket end is fitted to slide in a casing or frame, and its movement is resisted by springs as shown. These springs are two in number and are heavy car springs. They are 6¼ in. diameter and 8 in. long and made of round steel, 1¼ in. diameter. The springs are carried between spring plates, resting against stops in such a way that the springs are compressed for either thrust or pull of the drawbar, and the whole arrangement is built in the very strongest manner of steel, and each joint is strong enough vertically to carry half the entire weight of a pontoon upon it. In other words, should the entire buoyancy be removed from one pontoon for 50 ft. of its length by the trough of a wave, its weight could be rested upon the adjoining pontoon with safety.

This pipe line has now been tested during the working season of 1903, and no breakage or failure of these joint connections has occurred, neither does the ball-and-socket arrangement show appreciable wear.

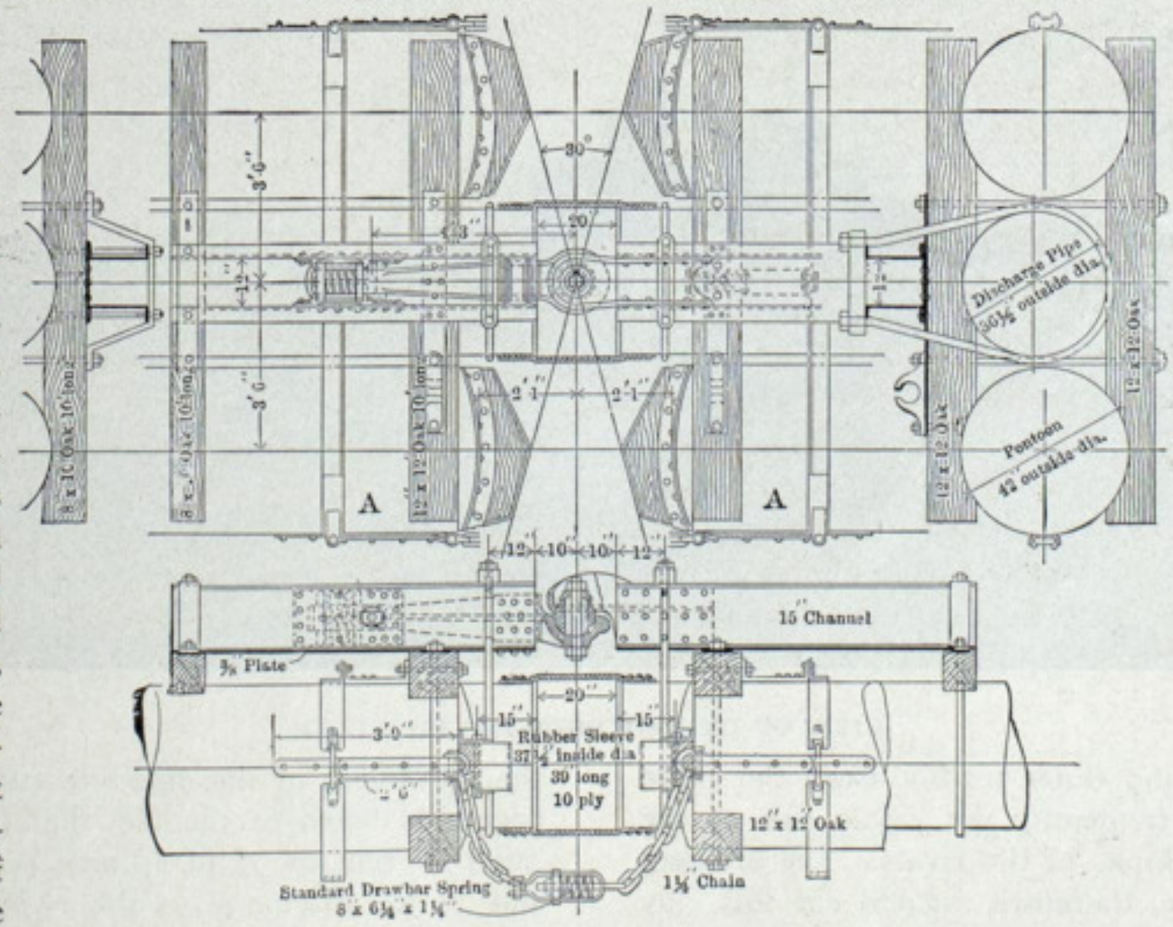
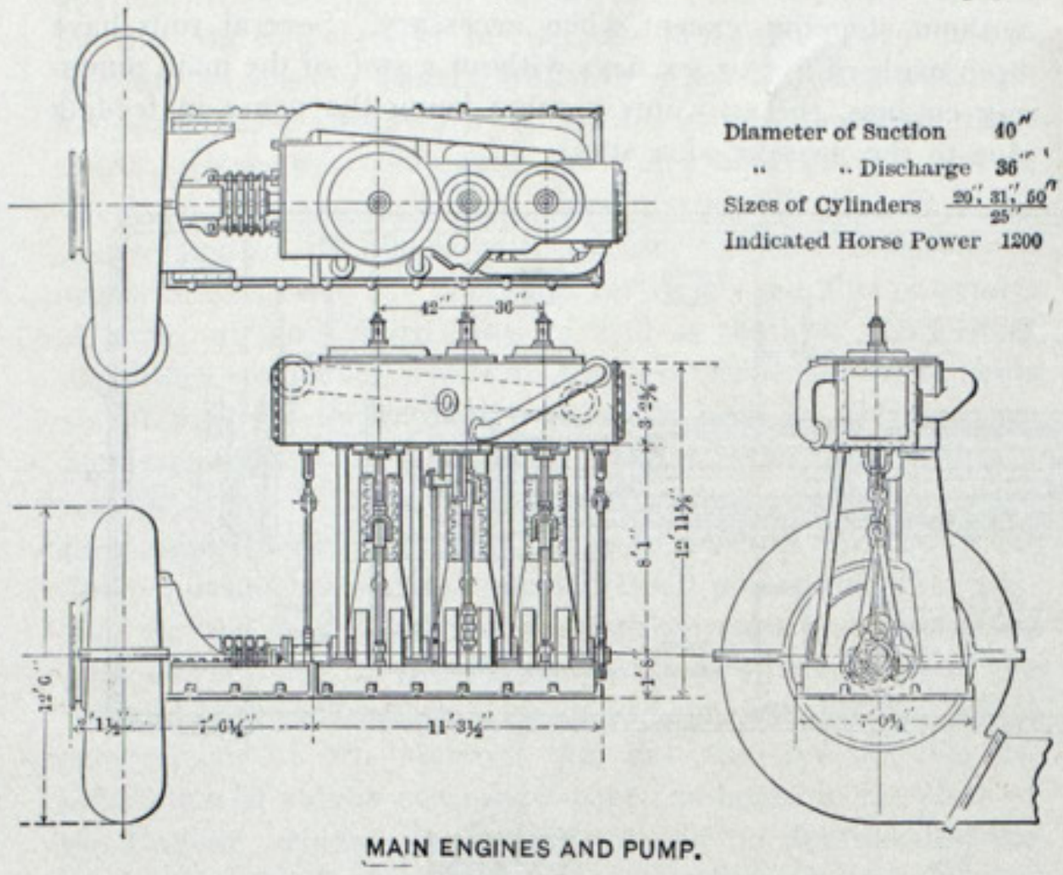


FIG. 4.

The elevator dredges, which are used on the lake, loaded into barges and can work in a moderate sea, but have to stop work when the surging of the barge against the dredge becomes too great. It was predicted that a flexible pipe line could never be made a success in Lake St. Peter, as it would be impossible to maintain it in the waves and that more time would be lost on account of weather than is the case with elevator dredges. As a matter of fact the position has been reversed, and with improved steel connections the dredge suffers less delays on account of the weather than the barge-loading dredges.

In order to provide flexibility of the pipe at the point of leaving the dredge a swivel elbow is employed, and the first length of pipe is short and connected to the elbow by a pair of hinges. The axis of the hinges is horizontal, while that of the swivel elbow is vertical; thus the movement of the pipe

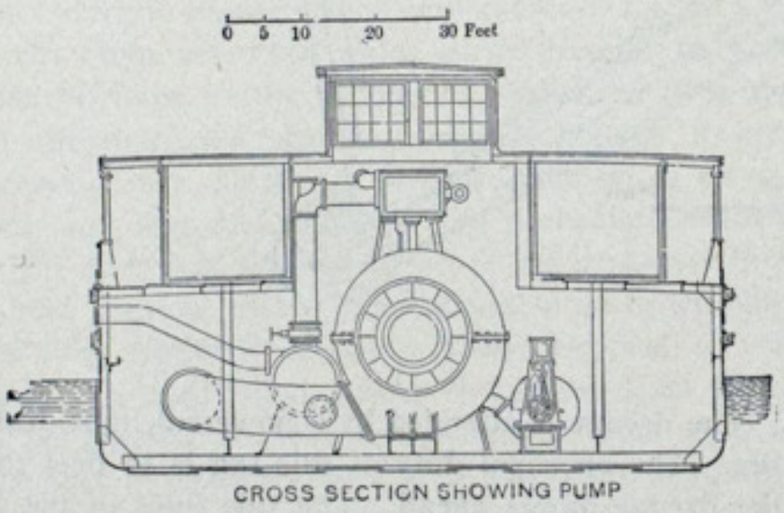


MAIN ENGINES AND PUMP.

FIG. 5.

is universal. The pipe leaves the dredge on the corner in order to permit the pipe to radiate from the dredge at any angle through three-fourths of a circle. The horizontal hinges at the swivel elbow will permit the main pontoons to have a vertical or wave movement of 5 ft.

At first the discharge pipe left the dredge through the stern near the center of its width, it being supposed that the pipe would always drift down stream with the current, or could be anchored in that position. Such, however, proved not to be the case, as a strong wind astern would temporarily deaden the current and cause the pipe to drift upstream. The position of the point of leaving the dredge was therefore changed to that shown on the plans, with a swivel elbow which permits it to radiate at any angle through three quarters of a circle. This arrangement is entirely satisfactory. No anchorage is used at any intermediate point of the pipe. It is attached at one end to the dredge and at the other by a short cable to a scow, the entire 2,000 ft. being free to drift as it pleases. The scow is fitted with a steam winch, by which its own anchorage is controlled. It has two anchors with wire cables, 1¼ in. diameter and 2,000 ft. long. These can be hauled in and paid out as required, and this movement serves both to distribute the material, to avoid piling up above the surface of the water, and also to regulate the tension of the pipe when the dredge is making a very wide cut. In places when the cut is 750 ft. wide the pipe tightens up to almost a straight line when the dredge is at the far side. The scow anchorage permits considerable freedom of movement and when necessary the operator on the scow pays out on his anchorage to relieve the tension and permit the dredge to make the cut.



CROSS SECTION SHOWING PUMP

FIG. 6.

The anchors used for holding the dredge are of large size to hold well. The side anchors and the bow anchor are alike as the strain is fully as great on the side anchors as on the head line. There is also a stern anchor worked by a special winch which acts like a towing engine, in that it hauls in and pays out the line automatically as the dredge traverses its cut to suit the varying length and keep a constant tension.

Turning now to the dredge itself, the general form and arrangement will be seen by referring to Fig. 7. The hull is of steel and is 160 ft. long, 42 ft. beam, 12 ft. 6 in. deep. The plating is generally ½ in. thick on the bottom and ⅜ in. on the sides, with 5-16 in. deck. The hull is rounded at the bilges, but is rectangular in plan with rounded ends in side view. There is a central opening, or well, through which the suction pipe works. This well is 8 ft. wide, except at the forward end, where it is 10 ft. wide to admit the cutter, and it is of sufficient length to receive the pipe. The suction pipe is formed of a rectangular steel box grinder of great strength, and having its lower horizontal web extended in width so as to fit between the sides of the well. The flanges of this horizontal girder are formed of two angle irons, 5 in. by 5 in. by ½ in., covered with a plate 12 in. by ¾ in., which bears against the side of the well. This is for the purpose of withstanding the great lateral strain due to feeding the dredge sideways and with the cutter in contact with the bottom. The dredge being designed to work at a depth of 50 ft., the suction pipe forms a lever within the hull and both the hull and the attachments of the pipe thereto are of great strength to withstand the stresses due to contact with the bottom in a seaway and due to the lateral feeding. The suction pipe is hinged to the hull at the deck by means of massive steel hinge castings, and a steel bulkhead extends the entire width of the hull at this point. The sides of the hull are extended above the deck to form a solid steel bulwark entirely around the dredge, the hand rail being formed of an 8 in. bu.b angle, finished on the outside witn 2½ in. half round. These bulwarks form a protection against the seas which sometimes break over the dredge.

The suction pipe is suspended from a double steel A-frame over the forward end of the well, and the lifting winch for raising and lowering the suction pipe is carried on top of the frame. The suspension tackle is formed of two sets of heavy wire rope tackle, the diameter of the ropes being 1⅜ in. The sheaves are of cast steel with turned grooves and brass bushings. The hauling parts of this tackle in this way pass direct to the drum of the winch without the intervention of any idler sheaves, as would be the case if the winch were located below the deck. This arrangement has the further advantage of getting this winch out of the hull, where it would occupy valuable space.

The main engines are of the triple-expansion marine type, having cylinders 20 in., 31 in. and 50 in. diameter, by 25 in. stroke. They are adapted to run at 150 revolutions per minute, with 150 lbs. of steam. The engine room is provided with a complete outfit of all the usual accessories, including air pump, feed pump, surface condenser, heater, bilge pumps, etc.

The material is excavated by an improved rotary cutter, 9 ft. 6 in. diameter by ft. long, the weight of which is 10 tons. It is formed of steel blades with specially designed clearance spaces between them, so as to avoid clogging with the material and the suction pipe and passages through the pump are made very large for the same reason. The cutter is driven by a pair of engines placed on top of the suction pipe at the upper end. These engines are of the double tandem type of 300 I. H. P. They are of the most substantial description with all bearing surfaces extra large for continuous heavy duty. The gearing and power transmission for these engines is of exceptional strength and capable at all times of encountering immovable resistances with full head of steam on the engines without risk of breakage. The main gearing driving the cutter is of cast

steel 5 in. pitch and 15 in. face. It is worthy of note that during the whole two seasons that this dredge has been in service no breakage, or failure of any kind, has occurred to any part of the suction pipe, cutter or cutter-driving apparatus. This is due to the exceedingly substantial character of design and construction, and tne direct manner in which the strains are met; also to the fact tnat the engines are the weakest part and can be stalled at any time with safety.

Steam is furnished by four boilers, having collectively 8,500 sq. ft. of heating surface, and adapted for working pressure of 160 lbs. There is coal bunker capacity of 200 tons.

The main pump is of the centrifugal type, having cast steel runner of enclosed type and heavy cast iron shell. The blades of the runner and the heads of the pump are protected by renewable steel wearing plates in the shell. This shell is exceedingly heavy, so tnat it can stand a considerable amount of wear before it begins to fail, and it is also so designed that the stream of material issuing from the runner does not strongly impinge upon it at any one point. In this way the tendency to wear is greatly reduced as compared with ordinary pumps. The original pump witn all its parts is still in use and in good condition, after two years of service.

The whole of the operations of the dredge are controlled from the pilot house on the upper deck. Here are located the levers for both the bow and stern anchorage winches and the lifting winch for the suction pipe; also a system of bells and signals to the engine room. The pilot house is so placed that the operator has an unobstructed view up and down the river; also of the entire discharge pipe. It is necessary for the dredge to get out of the channel to enable vessels to pass. For this purpose the operator causes the dredge to remain on that side of the channel on which the discharge pipe is situated and slackens out the breasting lines on the opposite side so that they rest upon the bottom.

The dredge is fitted with complete quarters for a double crew of 36 men, or 18 men on each shift. The dredge works continuously from Sunday night till Saturday night each week, without stopping, except when necessary. Several runs have been made of five or six days without a stop of the main pumping engines, the only interruption being the pause in feeding due to the passage of a ship.

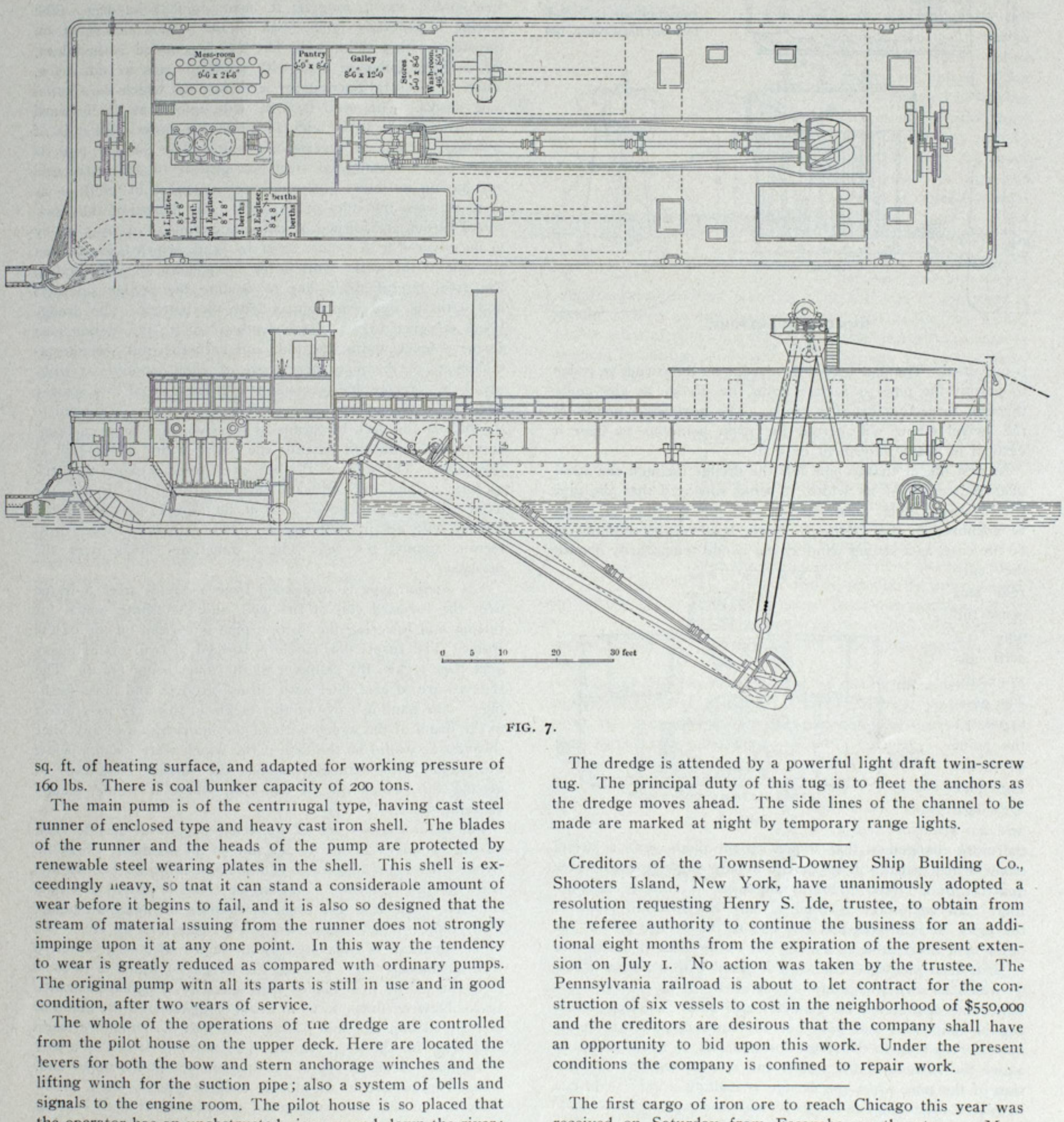


FIG. 7.

The dredge is attended by a powerful light draft twin-screw tug. The principal duty of this tug is to fleet the anchors as the dredge moves ahead. The side lines of the channel to be made are marked at night by temporary range lights.

Creditors of the Townsend-Downey Ship Building Co., Shooters Island, New York, have unanimously adopted a resolution requesting Henry S. Ide, trustee, to obtain from the referee authority to continue the business for an additional eight months from the expiration of the present extension on July 1. No action was taken by the trustee. The Pennsylvania railroad is about to let contract for the construction of six vessels to cost in the neighborhood of $550,000 and the creditors are desirous that the company shall have an opportunity to bid upon this work. Under the present conditions the company is confined to repair work.

The first cargo of iron ore to reach Chicago this year was received on Saturday from Escanaba on the steamer Manchester. It consisted of 2,700 tons and was consigned to the Iroquois Furnace Co. The Furnace company was compelled to suspend its operations and discharge its force of men ten days ago on account of the lack of material.

DAILY OCEAN NEWSPAPER.

On Board R. M. S. Campania, Queenstown, June 5.—The present voyage of the famous Cunard liner Campania from Liverpool to New York marks a new era in the progress of the line from the fact that the improvements recently effected in the Marconi system of wireless telegraphy will henceforward enable the Cunard Bulletin, which has been a feature on board these steamers to be issued in the form of a daily ocean newspaper, containing short accounts of the leading events as they occur on both sides of the Atlantic. It is, of course, known that the famous inventor has had his system of wireless telegraphy in operation on nearly all the passenger steamers of the Cunard Line, as well as those of many other steamship companies, but with the less perfected instruments so far fitted on these ships, it has only been possible to communicate with shore stations and steamers so fitted within a limited area. The new apparatus, however, fitted on board the Campania for her present trip is so much in advance of the older instruments and of such increased power that it is possible for the ship to be in continuous wireless communication with one or other of the Marconi stations on each side of the Atlantic wherever she may be en passage, and it is this recent achievement of Mr. Marconi that has rendered possible the publication of a daily ocean newspaper on board in the place of the Bulletin, which was formerly issued on approaching the land station on the outward or homeward voyages, or in consequence of picking up some important news item from a passing steamer in mid-Atlantic. As to the improved apparatus itself Mr. Marconi has no misgiving as to its efficiency for receiving long distance messages. What is now only wanting is the necessary power behind it which will increase the area of the ether waves, and thus render it possible that direct communication can be made between the shore stations on either side of the Atlantic, as apart from, say, the shore stations at Poldhu in Cornwall, and a vessel in mid-Atlantic. This he hopes to be able to do in two or three months time as a result of greater electric power which will increase the area of etherical waves from say 1,500 miles as at present, to 3,000 miles, or from Britain to the American seaboard. But the provision of the increased power, necessary though it may be to the success of Mr. Marconi's present ambition, is an expensive detail, and impedes somewhat its immediate realization. From the fact that this increased power is as yet only possible at shore stations, and is not obtainable on board ship, only permits long distance messages being received by the Campania, and not until equal power is generated on board ship will it be possible to transmit messages from ship to shore stations over the long distance area. In other words the ship can receive continuously messages from the shore stations in any part of the Atlantic, but the ship on its part can yet only call up such shore stations as the location of the ship may be within the limited etherical wave area controlled by the apparatus on board ship. But this problem is being seriously dealt with and Mr. Marconi, who is again a passenger by the Campania, said he entertained no doubt that eventually it will be possible to transmit as well as receive messages to any of the shore stations, from any part of the Atlantic ocean. What this will mean to the ocean traveler, only those who have spent several successive days on board ship, out of touch as it were with the outer world can appreciate, and it is no small tribute, as one authority has stated, to the utility of wireless telegraphy that a large and important company like that of the Cunard should so quickly have realized its indispensability by adopting it on all their liners. A writer in the Cunard Bulletin on the last passage made by the Campania observes: "The pursuance of a policy which has for its object the acquisition of that which must immeasurably lessen the perils of ocean travel and contribute towards the comfort and composure of the passengers compels admiration and thankfulness. If space permitted many and varied are the interesting incidents that might be recounted describing how dangers have been successfully avoided, difficulties diminished and very probably lives saved by reason of an unseen vessel being able to communicate with another ship fitted with the Marconi apparatus, or with one of the Marconi land stations. But to revert to this one of Mr. Marconi's present objects, that is, the completetion and perfecting of an arrangement whereby in the near future items of news may be daily received on board from the coasts. What is more useful or more valuable at the present time than the daily diffusion of the world's news through the medium of the newspapers? An event which is no longer a mere adjunct to every day life, but may justly be regarded as an indispensable part thereof. During the present voyage the writer who made the passage to Queenstown, had placed before him at breakfast on Sunday morning after leaving Liverpool the previous day, the first issue of this daily bulletin, and from the interesting nature of its contents, one can safely anticipate that just as eagerly as the city man expects his morning paper and imbibes its contents, so will the ocean traveler look forward to the publication of news from distant lands. As this venture has been so successfully launched and must become a permanent institution on Atlantic passenger liners, it is hardly necessary to add that its development will be watched with the greatest interest the world over.

ASSOCIATION OF MOTOR BOAT MANUFACTURERS.

The National Association of Engine & Boat Manufacturers was formally organized last week at the Manhattan hotel, New York. The membership roll was signed by forty-four of the leading manufacturers in these lines from all parts of the country. The charter of the association, under the laws of the State of New York, was received, and the constitution and by-laws adopted. H. A. Lozier, of the Lozier Motor Co., presided, and E. W. Graef acted as secretary. It was decided to postpone the election of officers and an executive committee until the next meeting, which will be held at the Manhattan hotel on June 27. In the meantime Mr. Graef will communicate with all the members and ask all who cannot attend to signify their choice for these offices.

The objects of the association are in part as follows: To get special freight rates; to establish a bureau of information; to make special arrangements in regard to and to participate in the profits of shows; to protect its members against adverse legislation and questionable advertising schemes; to bring forward the new and improved methods in construction, and to take such action as will be in the interests of its members as regards alcohol as fuel.

The membership of the association is as follows: The Lozier Motor Co., the Standard Machine Construction Co., the Bridgeport Motor Co., the Gas Engine & Power Co., the American Iron Works Co., the Buffalo Gas Machine Co., the Charles A. Strehlinger Co., the Toquet Motor Co., Panhard & Lavoussour, the Matthews Boat Co., the Isham Co., Fred Hock, the Delaware River Motor Co., Pilmer Bros., the Standard Boat Co., the E. Gerry Emmons Corporation, Norwood Bros. & Co., the Eagle Bicycle Co., the Cushman Motor Co., the Wolverine Motor Works, Lacey Brothers, the Chase Pulley Co., A. Barrett's Sons, the Pearson Boat Construction Co., Termadt & Monahan, the Truscott Motor Co., the Pierce Engine Co., the White Craft & Power Co., Charles Durkee & Co., the Smalley Motor Co., the Miamus Motor Co., the Outing Boat Co., the Remy Electric Co., William Roche, the Stanford Motor Co., E. W. Graef, the Smith & Mabley Mfg. Co., the Milton's Point Ship Yards, T. S. & A. D. Negus, the Electric Launch Co., A. Paterson, the Motor Boat, Motoring and Boating, and the Automobile.

The Dominion government has decided to equip the lightship Lurcher, off Yarmouth, N. S., with a submarine bell.

DEVOTED TO EVERYTHING AND EVERY INTEREST CONNECTED OR ASSOCIATED WITH MARINE MATTERS ON THE FACE OF THE EARTH.

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JUNE 16, 1904.

A bill was introduced in the last congress to provide for celebrating the first prominent settlement in America of English-speaking people by holding an international naval and marine exposition in the waters of Hampton road in 1907. The town of Jamestown was founded by the English on May 13, 1607, and the settlement is conspicuous in the history of the American nation by reason of the vital and critical events which have taken place in the colonial, revolutionary and civil war eras. Indeed that section of the commonwealth of Virginia is historically famous since it is the scene of the capitulation of Lord Cornwallis at Yorktown and the first naval conflict between the armor clads Monitor and Merrimac. The bill provides for the appointment of a naval and marine commission to consist of two rear admirals, two members representing the merchant marine of the country and a fifth member to be appointed in the discretion of the president. The purpose is to comprehend a naval and marine display that will be commensurate with the great event to be celebrated. Foreign nations are to be invited to exhibit their naval craft and merchant marine vessels, and the intention is that the representation shall be such as to illustrate to the world the development of merchant marine and naval architecture.

The suggestion of a naval and merchant marine exposition is a most excellent one and should be encouraged. As far as the navy is concerned the ships of the United States will show up equally well with the ships of other nations. A coastwise fleet will also be displayed of considerable dimensions, but unless there comes a decided change in the attitude of congress towards the foreign trade the American ships devoted to that service will be conspicuous by their absence.

Now that the strike of the Masters & Pilots' association is at an end, it might be well to review matters a bit. It has lasted for nearly two months and for six weeks of that time effectually tied up the freight carriers and kept the line boats at the docks during the entire controversy. It cannot be said that the fight, as far as the masters are concerned, was marked by either a good declaration of principles or good generalship. It is the first time in the history of lake commerce that the owner has had any trouble with his master. The controversy was projected by the Masters & Pilots' association in presenting a wage schedule and classification of vessels to the executive committee of the Lake Carriers' association which managed the affair for the owners. The classification was based upon a wage schedule of $2,250 for masters of first-class steamers. Other conditions were exacted, the most onerous of which was that an owner could not discharge a master unless approved by an arbitration board. The wage schedule demanded was an increase of 14 per cent. and over compared with last year's wages, and as the market was a falling one with lower prices for ore and lower wages obtaining in other branches of the trade, the Lake Carriers felt that they could not agree to an advance in wages. In fact, they maintained that the wage schedule should be lower rather than higher, but it was finally agreed to pay last year's rate of wages, which meant $1,900 for first-class steamers. The claim regarding the discharge of the master was finally waived and the advisory council of the Masters & Pilots' association offered to recommend to the association that last year's schedule of wages be accepted. This was the first intimation that the executive committee of the Lake Carriers' association had that they were dealing with a body not empowered to act finally. The proposition was voted down by the Masters & Pilots' association when submitted to a referendum vote and District Captain Howell announced that all negotiations were off and that the masters stood upon their original demands. The original demands were, of course, impossible and both sides were very wide apart indeed. The Cleveland branch of the National Civic Federation took up the subject and endeavored to arbitrate it. Both sides appeared before the Civic Federation, but the owners maintained that they had really nothing to arbitrate and dwelt very earnestly upon the point that the master of a vessel is the only representative that the owner has on board. He is endowed with so much authority by law that he is even

privileged, under certain circumstances, to sell the vessel. They maintained that the master had done an impractical thing by virtually entering into a union with the mates and declared that they were determined to deal with the masters as individuals if it tied up lake shipping all summer. There is no doubt that the owners would have maintained this attitude if it had kept their vessels in port all the year. However, a certain number of masters are part owners of the vessels that they sail; other masters have intimate personal relations with their owners; others also were opposed to the strike from the beginning; and gradually, therefore, this element began to return to the ships and to get them in commission. It is estimated that 150 steamers were in commission when District Captain Howell advised the masters as a body to return to work.

The fight of the masters while it lasted was most aggressive. Every hold was taken that could be, even to endeavoring to make the association a part of the American Federation of Labor through the purchase of an old charter belonging to the International Pilots' association. A quietus was placed upon this attempt, however, by President Keefe of the International Longshoremen, Marine & Transport Workers' association who declared that a sympathetic strike would not be tolerated.

It might be said that during the continuance of the strike the general commerce of the lakes was suspended and tens of thousands of men employed in the mines, in the railways leading to the mines, and on the receiving and shipping docks, were completely idle. These men were the real sufferers because they work for a day's wage while the masters of vessels get paid by the season. Aside from the great lakes, however, the general industrial conditions throughout the country were not sensibly effected as they would have been had a similar condition obtained on the lakes two years ago. Enough ore remained on dock from last season's shipments to keep the furnaces well supplied and therefore no pinch was felt in the iron making industry. In fact, the strike has contributed to ease conditions in this especial branch of trade, because it has served to rid the docks of surplus stocks. Lake Erie docks are now in very fair shape indeed.

Next week the Merchant Marine Commission, appointed by congress to inquire into the state of American shipping in the foreign trade, will come to the great lakes where 96 per cent. of the commerce is carried under the American flag in contrast with 8 per cent. carried under the American flag on the high seas. The first meeting in the great lakes region will be held in Chicago on Friday, June 24, immediately succeeding the adjournment of the Republican national convention. The general arrangements for the meeting in Chicago are under the jurisdiction of the Illinois Manufacturers' association and co-operating with it are the Board of Trade and National Business League. Officers and committees are working very hard to make the Chicago meeting a success and the commission will undoubtedly be favored with addresses from representative manufacturers of the inland states.

The commission will spend Sunday, June 26, in Detroit and will hold a general meeting there on Monday. Detroit has entered with great zest into the work of entertaining the commission and it is expected that one of the best meetings of all will be held in that city. The Detroit Board of Commerce is receiving the support of manufacturers and undoubtedly the addresses to be delivered before the commission will be of an illuminating character.

The Tuesday and Wednesday following have been reserved for Cleveland, in which city nearly 80 per cent. of the tonnage operating on the great lakes is controlled. The Chamber of Commerce of Cleveland has taken up the subject and has appointed a powerful committee to see that the affair is carried out properly. Cleveland with its experience in lake matters ought to be able to deal out a great deal of solid information to the members of this commission who have really in their hands the future of the American merchant marine. It will clearly be shown to the commission how by reserving American trade for American vessels an adequate merchant marine can be built up. However, the duty of the manufacturers and shippers of the inland states is supplying the commission with information. The remedy for the condition that obtains in over-sea shipping must be left to the commission itself to work out.

"THE MAN AT THE WHEEL."

Uncle Sam.

As a "business agent."

As a walking delegate.

As a labor leader.

How does that strike you?

And yet that is exactly what it amounts to.

As a result of our navigation laws the master or captain of a lake or sea-going vessel flying the American flag must be an American born or fully naturalized citizen.

Then before he receives his papers or license he is compelled to make an affidavit that he will perform all the duties required of him without any reservation whatever.

And further it is provided that, "If any licensed officer shall, to the hindrance of commerce, wrongfully or unreasonably refuse to serve in his official capacity on any steamer, as authorized by the terms of his certificate of license; or shall fail to deliver to the applicant for such service at the time of such refusal, if the same shall be demanded, a statement in writing assigning good and sufficient reason therefor; or if any pilot or engineer shall refuse to admit into the pilot house or engine room any person whom the master or the owner of the vessel may desire to place there for the purpose of learning the profession, his license shall be revoked."

And so on in a number of cases the laws provide, and court decisions have affirmed the duties of those who have been placed in responsible semi-public and government regulated and controlled positions to the effect that they shall in a

measure recognize the public character of their occupation as a result of the recognition given to them by the national government.

This virtually means that these men are really therefore officers of the law and yet we find these very men, sworn, licensed officers of the government, who, by virtue of their positions of responsibility, should command the universal respect of every citizen, sinking their individuality and entirely losing sight of the oath they have taken and destroying that feeling of respect and confidence that we have all hitherto had for them, their positions and the authority they have exercised.

And they have been strengthened in their conspiracy in the strike now drawing to a close on the great lakes by the fact that no one can fill their positions unless—

First—He is an American citizen.

Second—He has a government license.

This license then becomes practically a union card.

Issued by the government.

Controlled and regulated by the government or its agents who have held similar papers themselves previously and feel the same way probably about it.

If anyone should attempt to sail a ship therefore without his license (union card) Uncle Sam would step in and call a halt.

Regular business agent method.

If anyone should attempt to take out a vessel without the latest style of papers (union card) Uncle Sam, the walking delegate, is on the spot to prevent.

The Masters' & Pilots' Association do not have to say a word.

They just tell their walking delegate—Uncle Sam or his representative—and everything stops.

Nice state of affairs.

The attention of the Merchant Marine Commission who are now busy investigating the reasons that have led up to the decadence of American shipping is respectfully directed to this point.

They heard quite a little along this line during their trip to the seaport cities.

And their attention was drawn to the fact that the fictitious and artificial conditions inspired primarily by our own navigation laws had much to do with the great expense of operating an American vessel in comparison with the expense of a ship under a foreign flag.

And it was demonstrated very clearly that herein was to be found a serious factor that would have to be considered and regulated before it became as great an octopus upon the salt water as it now is to navigation upon the great lakes.

Every day can be seen in our seaport cities two ships of similar size, construction and engaged in identically the same business, the only apparent external difference being the color of that piece of bunting at the stern.

But—the internal difference.

Largely as a result of navigation laws, the expense of operation is increased from 25 to 40 per cent.

It would seem that where a law could be enacted that would result in increasing the cost it was right there.

And while some sort of regulation was needed to correct and prevent existing evils it was not there.

Is there a practical business man alive who cannot see where this all leads to?

But to come back to the beginning, some regulation has got to be provided to prevent the government's employes or agents or licensed officers using the power of the government to engage in a conspiracy to destroy the business of the country or any portion of it.

And that is what the masters and pilots have been doing.

Backed by government influence or government laws.

Relying more upon the strength given them by virtue of the navigation laws than by any justice of their own cause.

And yet these laws were framed for a good purpose and as far as they go may be all right.

But they stop short.

Right where they should begin to be effective.

They enact many things which result to the advantage of the individual effected.

But they fail to provide a "quid pro quo," a compensating obligation upon the part of those whom the laws are made to protect.

"All going out" and "nothing coming in" as it were.

And those provisions in the law which do indicate compliance with certain formalities are a dead letter and not enforced, and lack the enacting measures and penalties that are needful to make them effective.

The marine interests of the United States are confronted with an evil in this way, that is going to grow and offer a permanent obstruction to their prosperity unless an earnest and concerted effort is immediately made to prevent its growth.

For instance what a menace it would be to this country if every locomotive engineer had to have a government license.

Just stop a moment and think it over.

And if the engineers went on a strike no one but a government licensed engineer could take out a locomotive.

Why, we would be in a state of rebellion hard to realize.

And yet the locomotive engineer has to know more kinds of things in a minute than some of these government proteges who are decorated with a government license have to know in a month.

And they have a thousand times more kinds of responsibility, more lives to protect, more danger to encounter, more watchfulness necessary, irregular and long hours to contend with, than fall to the lot of some of these self-decorated heroes who would find it difficult to get along were it not for some unwise laws of a too paternalistic government.

Uncle Sam is a great fellow at times.

But he is easy.

And his subjects have to pay the freight.

But if he is not more careful there will be no freight.

Incidentally he should go out of the walking delegate business or else adopt some laws and provide the means to enforce them in such a way as to strengthen his hands.

STAGES OF WATER.

The gage records of the United States lake survey show the following mean stages of water above mean sea level, for May, 1904:

	Stages during May, Feet.	Higher than during month last year, Feet.	Lower than during same year, Feet.	Higher than during May, 1895. Feet.
Lake Superior	602.51	...	0.05	0.13
Lake Michigan	580.95	0.52	...	0.82
Lake Huron	580.99	0.60	...	0.87
Lake Erie	573.16	0.07	...	1.68
Lake Ontario	247.64	0.95	...	2.68

Present fall Lake Huron to Lake Erie, 0.53 foot more than year ago.

HOW BUFFALO VIEWS IT.

Buffalo, June 14.—The lumber freight is very active and is not only bringing in more lumber than the average of former seasons, but it is reported that the rates are firmer than they were last season. There is a general idea that these rates are going up as soon as new-sawn lumber is ready to move and that there will be high freight rates this fall. In this the lumbermen and some other shippers appear to agree. Whether the prediction will hold good for all class of freights does not appear yet, but if crops are good it is likely to.

Pfohl & Son, who used to be in doubt as to the best thing they could do with the burned steamers they have a habit of buying are now hard at work on all that they have on hand, and are saying that they will make enough on them after the first of September to pay for the new work they put on them. They have the J. Emory Owen, which was burned considerably at Sturgeon bay last season, and will rebuild her at Milwaukee.

They have also lately bought the Pere Marquette steamer Shenango, which was burned off Conneaut last season, and are raising her. The report is that she is not badly burned and can be raised without much difficulty. The twenty-six steel cars on board of her will come off practically uninjured. The firm now claims to own all the burned steamers on the lakes except the R. A. Packer, which is in shallow water off Detour, where she burned two years ago. The owner appears to be waiting for them to take her along with the rest.

Buffalo is slowly getting to be a lake port again, in spite of a series of drawbacks that have done what they can to deprive her of the distinction. Some difficulties have had to be met that did not confront the other ports quite so directly. With a milling capacity (including Niagara Falls) of about 70,000 bu. of wheat a day, there was very little to be had for the last half of May, though the spectacle of plenty of it from Canadian Lake Superior ports that could not be touched was witnessed right along from the opening of that lake.

The Goodyear pig-iron furnaces, known as the Buffalo & Susquehanna Iron Co., are about ready for operation, and yet there is hesitation over the propriety of doing anything with conditions as they are. If iron should go up the furnaces would be put into blast, but, as it is, with the ship canal to the furnaces not to be finished till late in the season, it is not likely that the owners will go to making iron at present.

We are still looking down the Niagara for a solution of the problem of deep-water navigation. Congress appears to be in line for the outlay, but just what to do seems to be a question. The ship canal has its advocates, while at the same time there are some good people who are intent on a decided innovation in engineering, which is no less than the building of a great causeway direct from Black Rock, over Grand Island to Niagara Falls, crossing the east branch of the Niagara twice and affording a roadway for all sorts of land travel, rail, auto or wagon, and shortening the distance to Niagara Falls two or three miles. The east side of the causeway could be dammed up near Tonawanda and made into slack water to Lake Erie, and thus solve several problems at a cost that is said to cut the cost of the ship canal in two more than once.

Then the agitation of the problem of pushing the deepening of Buffalo river up stream some miles further, straightening the stream and abating the floods, is on as much as ever. There is a lot of self-interest, railroad opposition, jealousy and the like to deal with, but if the lake trade is to increase indefinitely there will be need of all this suggested enlargement of the water frontage of the port.

JOHN CHAMBERLIN.

On June 12 dredging was begun on the river at Lorain. The river is to be dredged to a depth of 21 ft. from the car dump out to the deep water line. The dredging men have been instructed to do at least a month's work.

AFFAIRS AT HEAD OF THE LAKES.

Duluth, June 15.—All grain that has been afloat in Duluth harbor for the past two or three weeks has now been forwarded excepting one cargo of flax. Vessels are gradually recommencing business and the arrivals show a continual gain. There are now in store at the head of the lake 9,882,000 bu. of all grain, chiefly flax, a net reduction for the week of 1,400,000 bu. Receipts are good for this season, amounting last week to 241,000 bu. of all grains.

Announcement a few days ago in the daily papers that the Great Northern Power Co., of this city, had completed its financial undertaking and was all ready to begin work on the construction of its system, was a trifle premature. Initial negotiations are closed and the final signatures to papers of underwriters are expected to be written this week. In the meantime the company is arranging its affairs with a view to immediate construction when the details are completed. This is the company that has planned a water power system that will utilize the fall of 365 ft. back of the city and will develop about 30,000 H. P. in its initial installation. It will take water from a storage dam near Carlton, on the St. Louis river, conduct it in an open horizontal high level canal along the crest of the hills above this city, to a point where the canal will come very close to a point on the St. Louis river about 370 ft. below. There it will induct the water into steel pipes and drop it down to the river, impinging the flow on wheels at the river's level. This will give an immense fall and an enormous power. It can be increased from 30,000 H. P. to five times that when desired and if the plans of the company are not in error an increase will be needed soon after the first installation is complete. Among the installations of power figured on by the company are mills at the head of the lake, present electrical installations and the operation of main line railroads running between Duluth and Superior and the iron ranges. This latter has been under consideration with the Duluth & Iron Range, Duluth, Missabe & Northern and Great Northern roads for some time and will make the most important railway electrical installation ever undertaken, as these three roads move from 18,000,000 to 20,000,000 tons of freight in a year and are constantly increasing their traffic.

All reports from the northwest are that the wheat crop is looking finely, and that there is every reason to anticipate a "bumper." Advices received from points all through Manitoba and the Canadian northwest are to the same effect, and there are many localities there where a yield of from 25 to 30 bushels to the acre is expected.

Flour is still being shipped all-rail from the head of the lakes, and both it and shingles that have been waiting shipment for weeks have been sent east all-rail by the Great Northern within a few days. At the competitive rate made by the eastern roads both the Duluth, South Shore & Atlantic and the Omaha are taking a good deal of freight intended for the lakes.

At the Superior entry piers a crew of some seventy men is at work on the substructure. Eight of the submerged monoliths have been laid down but nothing shows yet above the surface. These blocks are 14 ft. wide, 16 ft. long and 22 ft. high, and will come to just below the surface of the water. It will be remembered that on account of the new problems involved in laying these blocks under water the estimates of all contractors was so much higher than the government figures that the war department decided to carry out this work itself, which it is now doing.

The steamer Forest City, aground on Bear's Rock, Georgian bay, 7 miles from Tobermoray, has been abandoned to the underwriters as a total loss.

The wreck of the Shenango which lies this side of the breakwater at Conneaut will be raised by Louis Pfohl & Son.

SITUATION IN THE ORE TRADE.

Now that the strike of the masters has been officially declared off vessel owners are beginning to turn their attention to the real business of the lakes. Leading shippers have chartered a number of vessels for the ore trade but freight rates have not been fixed. The vessels have been chartered on the understanding that season contract rates will be paid, whatever they may be. After June 15 last year, approximately 17,000,000 tons of ore was moved which is, roughly speaking, what this year's movement of ore is expected to amount to. Carrying charges last year were based upon a rate of 85 cents from the head of the lakes and vessel owners are hoping to obtain that rate this year. The rate last year, however, was by no means firm, and whether such a rate can be maintained this year is yet to be seen. A strengthening feature is the coal trade which is expected to be heavy from now on. The delay in starting the vessels has made the north-west eager for coal and last year's coal rates are freely being paid.

During the past two weeks owners have really not experienced very great difficulty in getting masters for vessels, and they were of opinion that the strike, when officially declared off, was about to fall of its own weight. With mates, however, the situation has been somewhat different, and very few of the 120 or more vessels that were in commission prior to the ending of the strike carried second mates.

Good feeling prevails in the offices of the owners and they harbor no enmity whatever against the men. Capt. John Mitchell voiced the general sentiment by saying that owners were willing to pay the top rate for first-class service. Mr. J. C. Gilchrist has pursued the general policy of giving masters the same boats that they formerly had, but this policy is entirely reversed in the fleet of the Pittsburg Steamship Co., where no man will be given the same boat that he had last year. It is expected that the entire lake fleet will be moving by the first of next week. The package freighters operated by the railway lines will probably all be in commission by the end of the present week.

Ore has been moving very freely forward from the docks to the furnaces and they are now in excellent shape to care for the trade.

APPOINTMENTS OF MASTERS AND ENGINEERS.

Northern Steamship Co., Buffalo: Steamship Northwest, Captain, George A. Minar; chief engineer, A. T. Stewart. Steamship North Land, captain, J. J. Hartman; chief engineer, M. N. McDonald.

Lake Transit Co., Buffalo: Steamer Scranton, captain, Jas. H. Greene; engineer, F. C. Frederick. Steamer Lackawanna, captain, Frank Weinheimer; engineer, W. B. Lewis. Steamer Russia, captain, McGowan; engineer, Wm. Brown.

Mitchell & Co., Cleveland: Steamers—Moses Taylor, Capt. C. B. Galton, Engineer, Wm. Fetting; F. H. Goodyear, Capt. Harvey A. Stewart, Engineer, Wm. Fritz; James Gayley, Capt. Chas. H. Wilson, Engineer, John Maedel; W. H. Gratwick, Capt. R. C. Jackson, Engineer, Chas. J. Love; J. J. Albright, Capt. J. W. Autterson, Engineer, Peter Lavely; Walter Scranton, Capt. H. H. Townsend, Engineer, Henry Graves; Wm. E. Reis, Capt. B. D. Townsend, Engineer, Louis Minnie; Henry C. Frick, Capt. James B. Lowe, Engineer, F. B. Parker; M. A. Hanna, Capt. Alex. Begg, Engineer, John D. Riley; H. S. Holden, Capt. Fred D. Galton, Engineer, John Scott; Lagonda, Capt. M. M. Stewart, Engineer, I. A. Francombe; J. J. McWilliams, Capt. G. E. Anderson, Engineer, Gus Guy; Major, Capt. ————, Engineer, Otto A. Guy; R. L. Fryer, Capt. Ed. Johnston, Engineer, Frank Thomas; Geo. T. Hope, Capt. Fred A. Pitcher, Engineer, John Ward. Barge, Troy, Capt. Henry C. Diem.

AROUND THE GREAT LAKES.

The passenger steamer City of Benton Harbor will leave the yard of the Craig Ship Building Co., Toledo, this week for Chicago.

The Manitou Steamship Co. has issued a card announcing the inaugural sailing of the season on Saturday, June 18. The steamers in this service are among the best on the great lakes.

The owners of the tug Michael Davitt of Buffalo, have brought suit against the county of Welland for $1,200, the amount of damages claimed to be due for repairs to the tug. Some time ago the tug struck a pile and sank while running in the Welland river.

Capt. Geo. Dunn of Owen Sound has purchased the schooner Ida A. Olsen from A. W. Kunna of Alpena, Mich. The boat has been changed to Canadian registry and will operate between Owen Sound and Little Current, Georgian bay district. The Olsen was built in 1888.

In a three-cornered collision at the St. Clair river rapids last week between the steamer Robert Fulton, towing the whaleback barge 134 and the steamer City of London, the barge was driven on the bank with some of her plating stove in, and the City of London was also damaged.

Upon complaint from the Masters and Pilots' Association that the steamer Western Star was not properly officered, inspectors from the custom house at Detroit boarded a ship, seized the papers and ordered her tied to the dock. The steamer later left under bond. The complaint of the Masters and Pilots' Association was that the Western Star did not carry a full complement of crew.

The steamer James H. Reed loaded at the Toledo & Ohio Central Railroad docks at Toledo on June 9, 8,029 tons 1,400 lbs. of soft coal. Always excepting hereafter the steamer Augustus B. Wolvin, of course, this breaks the lake record on soft coal to date. The previous record of soft coal was made by the steamer D. G. Kerr of the Provident Steamship Co., which took 7,685 net tons of bituminous coal from Toledo to Duluth.

M. Rabbitt & Co., Toledo, have been awarded the contract for dredging the new cut of the St. Clair Flats canal at the contract price of $361,000. The canal will nearly parallel the old one, taking a course through the new partly obstructed water of the old channel from the head of the present canal to a point near the outer light. The same plan of construction will be followed as was laid down by the late Gen. O. M. Poe, for building the present ship canal. Sheet piling will be driven to retain the walls of the cut and the dredging debris will be filled in it to be planted with willows after completion.

OBITUARY.

Capt. Joseph Whetstone, a well-known tugman, died at his home in Sandusky last week. He was sixty-one years old.

Capt. Donald McKenzie, a retired lake captain, died last week at his home in Detroit. He was sixty-four years old and was born in Hamilton, Ont.

Capt. Isaac F. Gilkey died at his home in Portland, Me., recently. He was master of the old ship Dakota and had the distinction of taking the first cargo of wheat that was ever shipped in Tacoma, Wash.

Capt. Charles David Cottrell, of the township of Cottrellville, Mich., died on June 11. He sailed the steamers Columbia, Franklin, Moore and Sam Ward in the '60's. He first sailed a small schooner, the Gazette, which stopped at Chicago with grain cargoes when that city was a village.

The Baltimore & Ohio railway has placed an order with the Baltimore Ship Building & Dry Dock Co. for a steel tug for use in New York harbor. She is to be 112 ft. long, 23 ft. beam and 12 ft. 6 in. depth of hold.

CANADIAN SHIPPING NOTES.

The foundry building at the yard of the Collingwood Ship Building Co., Collingwood, Ont., is to be completed at once.

The Dominion government is preparing to have a new steamer constructed for the quarantine service at Halifax, N. S.

The steamer Turbinia reached Sydney, N. S., from England on Saturday and is expected at Hamilton by the end of the week.

The three-masted schooner Ida Oleson, recently lying at Alpena, Mich., has been bought by Capt. George Dunn, of Owen Sound, Ont., for the lumber trade on Georgian bay.

The St. John, N. B., Dock Co. is negotiating with a contractor for the construction of the dry dock at that port, and expects to have the details all completed early in July.

The City of Windsor will be commanded by Capt. P. M. Campbell, and A. B. Pratt, lately with the Northern Navigation Co., will be purser. The steamer will run from Collingwood to Sault Ste. Marie, Ont.

Owing to the frequent delays of steamers at the western gap, at Toronto, by reason of an inefficient foghorn service, the Dominion government has decided to put up a more modern and more powerful horn.

The Dominion parliament has under consideration a bill providing for the inspection of the machinery and equipment of boats propelled by gas, fluid, naphtha, electricity or any other mechanical or chemical power.

The steamer Urania, formerly run by the Lake Erie & Detroit River Ry. Co. between Rondeau and Port Stanley, Ont., and Cleveland, O., has been sold to Windsor, Ont., parties who propose to replace her on her old route.

A new steamer named the Annie, for towing and general service on the Newfoundland coast, has been launched at Fogo, N. F. She is fitted with two sets of compound engines, 7½-in. and 13-in. cylinders, by 12-in. stroke, and will make 11 knots an hour.

Capt. McLaughlin, an old-time mariner, died in Toronto recently, aged eighty years. He was master, among others, of the Perseverance, Enterprise, Elizabeth, Victory, Mary Caroline, Mary Taylor, Odd Fellow, Alice Grover, J. A. Torrance and Lacoucier, whose names and routes old mariners will recall.

A bill providing for harmonizing the rules of navigation with those of the United States has been passed by the Dominion parliament. The act authorizes the Governor-in-Council to proclaim the new regulations as soon as they have been examined by the authorities. This question was one brought under the notice of the government by the Dominion Marine Association.

A charter has been granted by the Dominion government to Revallion Bros. (Ltd.) to take over the trading business of Revallion Freres of Paris, London and elsewhere. The company has trading stations at Quebec, Edmonton, on the shores of Hudson's bay, etc., and its property includes a couple of steamers. The capital is fixed at $5,404,000, and P. D'Anigeaux, of Quebec, is named as the agent of the company in Canada.

The Richelieu & Ontario Navigation Co.'s steamer Canada was sunk in the St. Lawrence river, off Sorel, June 12, after having been in collision with the Dominion Coal Co.'s steamer Cape Breton. Five lives were lost. The Canada was a side-wheel steamer, built at Sorel, Que., 248 ft. long, 31.2 ft. beam and 10.8 depth of hold. She was 1,768 tons gross and 962 tons register, and was licensed to carry 600 passengers. The Canada was formerly employed on the Quebec-Saguenay, but for the last year or two has been running between Montreal and Quebec. Her value is placed at $190,000, but she was uninsured.

THE NAVY LEAGUE

The Navy League was incorporated under the laws of the state of New York on Jan. 2, 1903, its declared object being "to acquire and spread before the citizens of the United States, through branch organizations and otherwise, information as to the condition of the naval forces and equipment of the United States and to awaken public interest and co-operation in all matters tending to aid, improve and develop their efficiency." These principles are substantially the same as those of the different navy leagues of Europe, notably those of Germany and England, which have large memberships and have proved themselves strong factors in the upbuilding of the navies of their several countries. The league is strictly non-partisan and a thoroughly patriotic organization. The present membership is nearly 4,000, and a vice president of the English Navy League, in an article in its journal, says "that he considers this a good showing for the first year." There are at present 45 sections in the various parts of the United States, including four foreign sections, three of which are in Europe, viz., in Florence, Paris and Hanover, and one at Bogota, Colombia. Several of the sections exceed 100 members. At most of them meetings are held, naval topics discussed and great interest is shown. The membership includes a large number of women, who are active in the work of the league. In many towns and cities where sections are established, prize contests are instituted in the schools for essays on some naval topic, the prize being a picture of some famous ship of the navy, with the signature of the officer in command at some notable time. The last contest was at Bethlehem, Pa., the prize being a picture of the Olympia, with Admiral Dewey's signature. In the last month eight new sections have been formed and the enrolment has been increased by several hundred members. The official organ of the league is The Navy League Journal, a monthly magazine that endeavors to give the news of the navy in a popular way and to keep the public informed as to the needs of the navy. It has a circulation of about 5,000 copies. The league is now on a firmer basis than the English Navy League was at the end of its first year.

OUR SHARE.

A British parliamentary return of the shipping tonnage of the Suez canal has just been issued which shows that of 3,761 vessels of 11,907,288 net tons which passed through the canal in 1903, twelve vessels of 23,612 net tons were American. A further analysis, however, shows that eleven of the twelve American vessels, of 23,216 net tons, were war ships and transports, leaving for our merchant marine a record of one vessel of 396 net tons!

PERSONAL.

Mr. O. T. Warren, superintendent of the Buffalo Dry Dock Co., has resigned his position.

Mr. William F. Durand, professor of marine engineering in Sibley college of Cornell university, has tendered his resignation to accept the directorship of the College of Mechanical Engineering at Leland Stanford university. Prof. Durand was graduated from the United States naval academy in 1880.

The Higgins Gifford Boat Mfg. Co., Gloucester, Mass., have just completed a Seine boat launch for Dr. F. I. Proctor, Boston, Mass. It measures 40 ft. over all, 9 ft. in width and 6 ft. 3 in. height in cabin. It is finished in cypress and mahogany and is fitted with a twin-screw Fay & Brown motor of 12 H. P. The company is also building a 37-ft. Seine boat launch for C. A. King of Boston, Mass. This launch will be finished in buttercup and mahogany with cabin and awning, and will be equipped with a twin screw motor. The company is also building a couple of gasolene dories with Mianus motors.

KNOTS FROM AN OLD SAILOR'S LOG LINE.

By J. H. Andrews.

I have seen from time to time many sketches of the early navigators of Lake Superior in the columns of the Marine Review and have read them with interest and think it would not be amiss to add to those articles some of my own experiences of the early days of lake navigation. I commenced sailing on the great lakes early in the forties, to be exact in 1843, beginning in the class of vessels that were in commission in those times, brigs, schooners and barques. Believing it will be of interest to some of the old timers, who, if alive, will remember them I will give some of the names of those early craft, most of which are now but a memory. I drifted about, in my early seafaring life, as sailors are wont to do, having sailed in the schooner Cambria, brig Alert, schooner Philena Mills, brig Scott, brig Catalia, brig Odd Fellow, brig Globe, brig Mary of Chicago, and was in this latter vessel, in 1849, the year of the big freshet in Chicago. Later I went to the brig Boston, brig Banner, brig John Irwin and barque Morgan. My first charge as master was the schooner Flying Dutchman and in 1850 witnessed the burning of the steamer Griffith on Lake Erie.

In 1853 I took charge of the schooner Seaman and was in the lower lake trade most of that year, carrying, however, one cargo of powder to Sault Ste. Marie, consigned to Spaulding & Childs. In 1854 I carried one cargo of powder to the Sault in June and also one cargo of stone for the locks. I left Port Colborne on Nov. 23 with cargo of powder, bound for Sault Ste. Marie and arrived there on Dec. 2; was in company with the schooner Grand Turk which went ashore at Presque Isle. She was the only vessel we saw on Lake Huron and we were the only vessels that got through to Lake Huron after Nov. 25 of that year. We finished discharging our cargo on the morning of Dec. 4, the thermometer standing at 11 degrees below zero and I got under way for Cleveland but succeeded in getting only as far as the foot of Lake George, where, in one night, the vessel froze fast in 6 in. of solid ice. I concluded to strip the vessel, and leaving one man on board, took the balance of crew, and crossing Sugar Island to Hay Lake, went back to the Sault. I made several trips to the frozen up vessel that winter before I left for Cleveland, using snow shoes. Deeming it inexpedient to remain at the Sault all winter, I fitted out for a "snow shoe voyage" to Cleveland and on Jan. 17, 1855, in company with my mate, Capt. Wm. Jackson, an Indian and two dogs, took my departure from the Sault on snow shoes, by way of Mackinac and Saginaw, the only convenience to be had in those days. Few of my readers are in a position to realize what hardships such a trip as this entails. After 31 days of continuous toil we succeeded in finishing our trip; no sleepers to ride in at that time.

In March of 1855 I took charge of the brig Freeman, belonging to the same owner, Mr. H. N. Gates. On the opening of navigation I loaded cargo of coal and grindstones for Milwaukee after discharging loaded wheat at 26 cents per bushel for Ogdensburg. On delivering this wheat at Ogdensburg I loaded a cargo of Scotch bloom iron at Prescott for Cleveland, after which went to Buffalo and loaded 7,000 kegs of powder for Lake Superior, shipped by Niles & Kinney. Arrived at Sault Ste. Marie about the middle of June where I discharged some of the powder and where I succeeded in getting some charts of the Hudson Bay Fur Co. These charts were made by Lieut. Bayfield, an Englishman, in 1825. On June 18 went on up to the lock to go through and found the schooner Ford, Capt. John Parker, in the lock bound down. When he came out of the lock, bound down loaded with copper, I took it, bound up, the Freeman thus being the first sail vessel passing through the lock bound up. Two steamers had gone through before, being the Illinois and North Star. We set the fore topsail and sailed on to Lake Superior; calling at Marquette I left 360 kegs of powder and proceeded on to Eagle river where I landed more of my cargo and passed on to Ontonogan and finished unloading my cargo of powder there. At Ontonogan I took in 152 tons of mass copper and 30 tons of stamp copper consigned to the smelting works at Detroit. After discharging this copper at Detroit I went on over to Cleveland and took in part of a cargo of supplies at Hanna & Garrettson's for Lake Superior points, comprising Eagle River, Ontonogan and La Pointe. On returning to the Sault took in 200 tons of iron ore from Thos. McKnight's dock, which was brought to the Sault from Marquette by the steamer Napoleon, before the canal was open. This was the *first* ore I ever knew of being brought from Lake Superior by sail. The date was, I believe, August, 1855. There were but very few tugs at that time on the lower rivers, hence we were forced to sail through. After landing this ore at Cleveland I made a quick trip again to Lake Superior with only part of a load and returned immediately to Cleveland for part of a load and went over to Detroit, finishing out with lumber for Stamp mill at Ontonogan. There being at this time no copper or iron ore at Marquette I returned to Monroe (Lake Erie) and loaded flour and West India stores for Buffalo. My next cargo was made up at Buffalo, Cleveland and Detroit for Ontonogan and way ports. During this time the brig Freeman was sold to parties at Ontonogan where I took her and discharged her cargo, taking in, for the return trip, 50 tons of mass copper and 8 tons barrel copper at $8.50 per ton frt. I took this to the Detroit Smelting Works in a few hours over three days, where, after discharging, I turned the vessel over to Capt. John Haloran on Nov. 11. Capt. Geo. P. McKay went first mate.

Returning to Cleveland I found my old schooner Seaman all loaded for Ontonogan and in trouble. She had no captain, no anchors and chains, part of her sails blown away and in a mess generally. She had started on her voyage and forced to return in a disabled condition. Her captain and crew had refused to go out with her again. She had about a $4,000 freight in her and the underwriters had refused to take any risk on vessel or cargo. The owner of the vessel, Mr. H. N. Gates, and the owners of the cargo held a consultation and, at the time of my arrival, had decided to unload the vessel. Mr. Gates asked them if they would leave the cargo in her if I would take charge of the vessel. On his part, Mr. Gates said, if I would take charge of the Seaman he would take the risk on the vessel himself. The owners of the cargo consenting to this arrangement, Mr. Gates turned to me and said "I insist on you going with the schooner Seaman." I answered him, "All right I will go as far as I can with her." I procured new anchors and chains, but found a very hard task in securing a crew. Every sailor thought he would be frozen to death if he went on board of her. I succeeded at last in getting a crew and departed, arriving at the Sault about the 20th and found the Freeman and Ford there bound to Ontonogan. Capt. McKay had been injured in getting through the lock and had to be carried ashore. We were wind-bound about three days but finally got a fair wind. The Seaman had in 4,000 kegs of powder and a heavy deck load of barrels. Our fair wind took us to Copper Harbor where the Freeman and Ford went and did not come out again that year. The Freeman struck a rock and sunk in the harbor. I hung outside and got a gale of wind fair and ran for Ontonogan. Arriving off Ontonogan I hove to and the storm abating stood in for the place. Found the steamers Ogontz and North Star there and they could not land their freight. I could not get inside and the little schooner Algonquin came out and took my deck load, which just about filled her up. At this juncture another snow storm burst upon us and I was forced to run for La Pointe for a harbor 90 miles away and to my astonishment the Algonquin followed me instead of going into the harbor, which she could have

done. The steamers scattered and left the balance of their cargoes at Ba De Gris and left the lake for that season. I got into La Pointe on Friday night but no Algonquin showed up. (It snowed about 3 ft. during that gale.) I had made up my mind that my deck load was gone. It was still snowing and everything frozen up and about 2 p. m. the Algonquin came around the foot of Madeline island into the harbor. Lowering away a boat I pulled to her and found she had been hove to during the gale and had lost but *one* barrel. It had been so thick they could not find the place.

After the weather abated we got under way and went on back to Ontonogan. The Algonquin got in all right but it was necessary for me to light more cargo before I could get over the bar. With another wild snow storm beginning to make this was anything but a pleasant outlook and all we could do was to lay to until it was over. With the thermometer 12 deg. below zero and the vessel loaded down with ice, I made the attempt the moment the storm began to abate, first lowering away a boat after letting go an anchor, and pulling inside. The people begged me to run the vessel ashore, saying they were so short of provisions they *must* have my cargo. Flour was $25.00 per bbl. and very little to be had. I said it was out of the question to purposely beach my vessel and if they did not try to assist me to get inside I would leave and not return there again that winter. It was then the 7th of December. We pulled back to the vessel, sounding on the bar as we went. I found there was within 4 in. of water we were drawing and another snow storm brewing, determined to make a last effort to get inside—and kept off for the buoy I had dropped when we sounded out. The vessel went about half way over the bar, stopped and began to pound, but keeping all the sail on her that I could, she lifted over, went on over and into the river about 4:30 p. m. on 7th of December. She fetched up in the ice and the next day we cut her alongside the dock with saws and began to discharge the cargo in a whirling snow storm. Determining to send the Seaman to Copper Harbor to get some of the cargo of the Ford and Freeman, the people came to me and made known their wishes. To this I replied, stating I could not think of going outside again that winter with a sailing vessel. They insisted that some one must go and offered to purchase the ship. To this proposition I consented and, making a price, they took her and placed a Capt. Beaser in command. The weather softening up some, he secured a crew and left at once for Copper Harbor, and as he had a fair wind the people naturally looked for a quick trip. (Will state here that, while I did not learn the facts until the following May, the Seaman went on the rocks at Copper Harbor between the shore and the light house, within 12 hours after I sold her.)

I stopped at Ontonogan until the 14th of January, 1856, and then fitted out for my second snow shoe trip to Cleveland. Perhaps had I then realized the terrible hardships and suffering we were to undergo I would not have undertaken it, nor is it my purpose to go into much detail in an article of this character. What is given is only for the purpose of illustrating the great difference in past and present conditions. Should a trip to Cleveland now be necessary it would mean but a few hours of luxurious travel, but at that time weeks of danger, of toil and great suffering surely were in store for the undertakers of a snow shoe trip through the pathless virgin forests in the midst of a northern winter, and as I gaze on the old time worn shoes hanging on the wall by my side as I write, and the events of that soul-trying journey crowding my memory, I cannot but exclaim "How dared I undertake it?"

After stopping over one night at the Minnesota mine, we left for Cleveland, plunging into the heart of the forest and traveling by compass entirely. For thirty days we floundered through the snow, suffering all the tortures that cold and hunger could inflict. On the 30th day, when all my party had sat down to die, fainting with starvation, as we had had but one raw hedge hog to eat for three days and nothing at all after that was consumed, I went on ahead in sheer desperation. Suddenly I came on to a water hole in the ice on a creek and a path leading up over the bank. With a new heart I hastened or the back track to find my companions. Only by beating, pleading and shoving them along could I force them to move. In that grasping lethargy, which always precedes the sleep of a death by freezing, they were indifferent to their end. We did finally fetch up in a logging shanty on the Wisconsin river, it being occupied by the lumberman whose water hole in the ice I had discovered. This shanty was about 25 miles north of what is now Portage City. It does seem hard that with over $12,000 in my possession I could not buy anything to eat, but it was of no more use than chaff. After recuperating we secured conveyance by horse and sled to Madison, Wis., where we took the cars to Chicago on the old Galena railroad. There I learned by hearsay that the Seaman had been lost and the crew frozen, although, as before stated, secured the facts the next May.

On my way from Chicago to Cleveland we stopped at Oberlin and chancing to look out of the car window saw my owner, Mr. Gates. Immediately going out I spoke and said, "How do you do, Mr. Gates." With a look of startled astonishment he stepped back and as soon as he could control his voice, said, "Is that you, Captain? I thought you were dead," and approaching took hold of my arm. "No, sir, I am not dead," I replied. "I see you are not, but where is my schooner Seaman?" "That I do not know, sir, but come into the car and I will tell you where I last saw her." After we had seated ourselves, he continued: "It is a very singular thing to take charge of a man's vessel and not know what you have done with her." I replied, "I do know what I did with her; I have her in my pocket, but the last I saw of her in the flesh she was, on the 11th of Dec., 1855, going 'winged out' for Copper Harbor." I then told him what I had got for the vessel and had that as well as the freight in my pocket, also that the crew were all alive. "If that is so I am satisfied," he said. On our arrival at Cleveland I turned the proceeds of the voyage over to him.

The Seaman was built in Cleveland in 1847 by Johnson & Tisdell and the vessel is still in commission in the lumber trade on Lake Michigan, I believe. One of her crew, Mr. James Hutchinson, is still alive. He is superintendent of schools at Painesville, O.

After this I took command of the schooner E. C. Roberts, building in Cleveland and owned by Bacon & Redington. The latter had been with my last owner, Mr. Gates, two years, while I was sailing for him. With the Roberts I was in the Lake Superior trade about six years, during which time Mr. Bacon sold his interest in her to Mr. C. T. Harvey, who built the Sault canal. He owned her two years. I was mostly in the iron trade and carried some mining supplies and furnaces and took the second locomotive that went to Marquette to haul iron ore from the mines; also two cargoes of railroad iron for the track with which to operate same. I also carried nearly all the output of the Pioneer furnace for two years and distributed it from Chicago to Buffalo while Mr. Harvey owned the vessel; and in 1858 I took the boiler of the City of Superior off of Copper Point. This vessel was lost the preceding fall and I did the work with the schooner Roberts.

The winter of 1861, after laying up the E. C. Roberts, I went to Black river, now Lorain, and built the barque Wm. Jones, owned by Mr. J. A. Redington and myself, and handled her eleven years successfully in the Lake Superior and Lake Michigan trade; then, with Mr. Redington, built the schooner

Nellie Redington in Cleveland and sailed her successfully for 21 years.

It is a matter of pardonable pride to the writer that of the many cargoes handled by me I never failed to deliver every pound to its rightful owner, and as these flights of memory are about the only thing an old mariner can indulge in, I cannot but feel satisfied with my long career; long, indeed, for on the 2d of May, 1904, it was 61 years since I began my seafaring life and one-half a century was spent on the great lakes. I have made several trips to the head of Lake Superior lately and appreciate fully the great changes in the shipping, which, as my readers all know, is now done with large fine steel steamers; no yards to haul, no traverse to work, straight away the course you go and never mind the winds that blow.

Closing my career as a commander with the sale of the Nellie Redington, I migrated to the east coast of Florida, lat. 27, long. 80, where from my window I can see my present ship, a 30-ft. sloop, lying at anchor on the Indian river. So, as I began with small ships, I close.

"My hair is white, my eye is dim,
My chance to stay much longer is slim,
Farewell Lake Superior, her waters clear,
Her hills to me that once were dear,
A summer clime is the place for me,
A sunny clime down by the sea."

GASOLENE SCHOONERS.

Fairbanks, Morse & Co., corner Franklin and Monroe streets, Chicago, have just equipped with Fairbanks-Morse marine engines three gasolene schooners which are to be used in the fishing trade in Alaska. The names of the schooners are Rita Newman, Mispah and Expansion. The Rita Newman is 100 ft. long, 30 ft. beam, 8 ft. depth of hold, 125 tons register. She is fitted with Fairbanks-Morse 75 H. P. twin-screw engines. The propellers are 4 ft. in diameter and revolve at 300 revolutions per minute. The fuel to be used is known as engine distillate, a California product running about 50° gravity. The fuel tanks are located on the deck and are connected with brass feed pipe to the two engines. The installation is made in such manner that either tank can be used with either engine or in whichever way desired. The engines are located as far aft in the vessel as possible, leaving unusually large cargo space.

The Mispah is a schooner-rigged vessel, 77 ft. long by 21 ft. beam, equipped with one three-cylinder Fairbanks-Morse 75 H. P. gasolene distillate engine. This vessel has been in service for three years and is now operating on low-grade distillate, which averages about 33 to 34° Baume scale. This schooner is also fitted with compressed air whistle apparatus and has the fuel tanks on deck similar to the Rita Newman.

The Expansion is 80 ft. over all by 26 ft. beam, and is equipped with two Fairbanks-Morse 50 H. P. gasolene distillate engines. The propellers of these engines are 4 ft. in diameter. The engines are also fitted with compressed air whistle apparatus and are designed to use California oil as fuel.

These three vessels are all used in the salmon industry at Bristol Way, Alaska. Their duties are to start from San Francisco carrying supplies to the canneries, and after arrival are used for transporting from deep water vessels up the rivers to the various points necessary. Then, when the canning season commences, these same vessels are brought into service for carrying the product from the canneries out to the deep water vessels, and they also bring their share of the canned product to San Francisco. The run takes about seven months' time, and from the day of leaving San Francisco until their return they are kept in continual operation.

Fairbanks, Morse & Co. are manufacturers of marine engines for all classes of trade, making these engines in sizes from 2 to 150 H P. in single units.

ITEMS OF GENERAL INTEREST.

The Fore River Ship & Engine Co., Quincy, Mass., is advertising for shipwrights and promises steady employment.

The schoolship St. Marys has sailed for Europe. She will visit the Mediterranean and Madeira Islands before she returns.

It is understood that the reorganization of the Lake Superior Co. has been perfected and that the additional working capital of $1,000,000 has been secured.

The Russian naval program for the next ten years has just been decided upon. It provides for the construction of ten battleships, ten protective cruisers and a number of torpedo boats and submarines.

The training ship Enterprise which has been in the hands of workmen at the Atlantic Works at Boston, Mass., for the past two months is now ready for her annual foreign cruise. The Enterprise is the property of the state of Massachusetts.

A bill has been introduced in the congress of Brazil providing for the building of twenty-four war ships, including three ironclads and three armored cruisers for the strengthening of the Brazilian navy.

On June 12 five lives were lost as the result of a collision between the Richelieu & Ontario Navigation Co.'s largest excursion steamer, Canada, and the Dominion Coal Co.'s collier Cape Breton. The collision occurred six miles below Sorel at the entrance of the Lake St. Peter channel.

The new steamer Turbinia, built by Hawthorne, Leslie & Co. for the Turbine Steamship Co. of Hamilton, Ont., reached Sydney safely this week and is now in the St. Lawrence river. She is the first merchant ship to be so equipped to cross the Atlantic, though the turbine yacht Emerald and the Tarantula crossed some time ago. The Turbinia behaved very well on the way over, though considerable rough weather was experienced.

The steamer San Jose, the first of a trio of steamers building for the United Fruit Co. for its service between Boston and the West Indies, was successfully launched last week from the ship yard of Workman, Clark & Co., Belfast, Ireland. She is 345 ft. over all, 330 ft. between perpendiculars, 44 ft. 3 in. beam and 31 ft. 3 in. deep. Her engines will be triple expansion with cylinders 25, 41 and 68 in. in diameter by 48 in stroke. She is fitted with a refrigerating plant and is designed especially for the carriage of bananas.

The submarine torpedo boat Fulton sank to the bottom of the bay at Newport, R. I., one evening last week and remained submerged for over twelve hours. Naval Constructor Woodward of the trial board, remained on board the Fulton and a strict watch was made to see that she did not come to the surface. The men on the torpedo boat were on duty in watches of two hours each, the remainder of the time being spent in reading, playing games and sleeping. Fresh air was pumped to the boat every four hours and the crew says that it suffered no inconvenience and could have stayed twelve hours longer if it had been necessary.

The battleship Rhode Island, which was recently launched at the yard of the Fore River Ship & Engine Co., Quincy, Mass., is to be equipped with Babcock & Wilcox water-tube boilers of 19,000 I. H. P. In the description of the launch of this vessel published in our last issue, it was stated that the boilers were to be of the Niclausse type, but this was an error. The new cruiser California, building at the yard of the Union Iron Works, San Francisco, Cal., is also to be equipped with Babcock & Wilcox boilers of 23,000 I. H. P. The Napoli, which is to be the largest battleship in the Italian navy, is also to be equipped with 19,000 H. P. of Babcock & Wilcox boilers.

Merchant Marine Commission.

Next week will mark the advent to the great lakes region of the Merchant Marine Commission which is now making a tour of the country in pursuit of information which will lead the commission to frame a suitable measure that may be calculated to remedy the pitiful condition now existing in the foreign trade of the United States. This foreign trade which has gone into billions of dollars is carried almost exclusively in foreign bottoms, less than 9 per cent of it going abroad under the American flag. The purpose of the commission is to obtain all possible information upon the state of this industry, to ascertain the cause which has led to the decline of American shipping and to determine what remedies can be applied to restore it. The first meeting of the commission in the great lakes region will be held in Chicago on Friday, June 24, after the adjournment of the Republican national convention. The Illinois Manufacturers' association will have general charge of the Chicago meeting and will be assisted by the Board of Trade and the National Business League. Chicago is the great inland seaport of the United States and is the gateway of the great central west. It is expected that the Chicago meeting will be rich in information and to that end various interests will appear before the commission.

Sunday and Monday, June 26 and 27, will be spent in Detroit where the members of the commission will be the guests of the citizens of Detroit. The Detroit Board of Commerce is mapping out an excellent program and undoubtedly one of the most interesting meetings of the commission will be held in that city.

Tuesday and Wednesday, June 28 and 29, have been reserved for Cleveland. The Cleveland Chamber of Commerce has gone at the subject with great vigor and has appointed one of the most powerful committees to see that the members of the commission are well met. This committee consists of Harvey D. Goulder, Harry Coulby, H. G. Dalton, C. A. Graselli, L. C. Hanna, James H. Hoyt, W. G. Mather, John Mitchell, Calvary Morris, E. W. Oglebay, James C. Wallace and C. H. Wellman. The committee will outline its program of speakers in a day or two. Cleveland controls 80 per cent of the tonnage of the great lakes and undoubtedly the commission will be able to derive a great deal of solid information from the speakers who will appear before it. At any rate, it is quite likely that the meetings of the Merchant Marine Commission in the great lakes district will be of the most enthusiastic character.

MR. FRANK J. FIRTH'S ADDRESS AT PHILADELPHIA.

At the Philadelphia meeting Mr. Frank J. Firth delivered a very interesting address, in which he devoted his attention to the results obtained on the great lakes. He said:

"I have been invited to submit to you a statement embodying my views as to the kind of national legislative assistance that is needed to reinstate the mercantile marine of this country in the position it once held. The invitation says that your honorable commission is fully aware of the difficulties under which American vessels labor and that you do not need any information upon the comparative cost of building or operating American and foreign vessels, but you only desire suggestions as to the method of remedying disabilities known to exist.

"My business life has been devoted to the management of vessels operating upon the great lakes. These vessels are fully protected by existing coastwise laws and do not expect to benefit directly from any remedial legislation that may be enacted. They do expect to benefit indirectly because effective remedial legislation of the class you are considering must benefit the entire country.

"The recognized situation as to our merchant marine upon the ocean is that because it cannot be operated with a profit sufficient to attract capital it is rapidly passing out of existence. It can only live and grow in importance by its yielding a reasonable profit to those venturing their capital and time in the creation and management of merchant vessels. As this profit cannot be obtained without radical change in existing conditions, the practical question is how may such change be effected so that a sufficient sum will be added to the gross revenues such vessels are now able to secure to return a satisfactory profit to their owners.

"This necessary additional revenue can only be had through some form of aid extended by the United States government. The necessary aid should be extended if the result sought to be obtained is of such great public interest as to justify this exceptional action on the part of the government. It may not be amiss to here call attention to some of the reasons that appear to demand that the United States government shall recognize this proposition to restore our merchant marine on the oceans, as one of great public importance.

"The necessity for the creation and maintenance of such a naval establishment as will guarantee peace is generally recognized. Large appropriations are, and must continue to be, made to build, maintain and operate vessels of war. These war vessels can be of no possible practical use in times of active service without colliers, transports, etc. Shall the United States government build these colliers, transports, etc., and hold them idle in times of peace at an enormous expense for construction and maintenance, or is it wise to encourage (as may be done at much less cost) the building and operation of badly needed merchant vessels that can be used with profit to the country during long periods of peace and be always available for governmental use in time of war? There appears to be but one reasonable answer to this question. It is difficult to see how any patriotic citizen can hesitate a moment to admit that it is our duty to provide in peace for the needs of a period of war, and that this should be done under methods imposing the least possible burden upon the people. It is far cheaper for the government to cause the construction and operation of merchant ships, than to itself build and maintain the same ships for use by the naval establishment in time of war, holding them idle in time of peace.

"Incidental to this fundamental reason for rehabilitating the merchant marine, are the beneficial results to be found in the field that will thus be opened for our labor and capital in building, owning and operating vessels, and in opening new foreign markets for our products, which market can never be developed so satisfactorily by the use of foreign ships as by ships owned, manned and represented abroad by our citizens.

VESSELS RECEIVING AID SHOULD BE AMERICAN BUILT.

"If government aid is extended to our merchant shipping in any form it should not be allowed to operate for the benefit of foreign shipyards, but should be secured beyond possibility of doubt for our own shipyards and people. Vessels receiving aid should be required to be American built vessels. It may be well here to direct attention to the equity and wisdom of providing, in any comprehensive plan that may be formulated, for the just treatment of owners of existing merchant vessels in the foreign trade. Without the persistent effort of these owners to keep our flag afloat on the oceans we would not have left even the meagre tonnage now existing. These owners who have borne the brunt of the commercial war should not be forgotten, not only because it would be unjust, but also because it would be unwise, as they possess about all that we have left of expert knowledge and organization on which to build up our new merchant marine.

"When the aid extended by the United States government to the owners of the steamships St. Paul and St. Louis in-

duced the building of those ships in this country, it caused the expenditure here of $6,000,000, that would otherwise have been expended in England. Think of what this means? Try to follow this $6,000,000 into the possession of the shipyard owners; thence in part to their yard employes; in part again back to the steel works, the saw mills, every industry con tributing to the construction of a great modern vessel. Then on back from these industries to the miners of iron and coal and the workers in the lumber forests; to the farmers who feed all these workers. Do not stop here but follow this $6,000,000 further, back from these fundamental fields of labor to the flouring mills, the shoe, clothing and other factories supplying the laborers. So it goes on with its beneficent work without end as to time, and in ever widening circles. It is as a stone thrown into an ocean of still water, circles first small but ever enlarging spread out in every direction, greater in diameter as they become more and more distant, until the eye can follow them no further. Can any thoughtful person esteem it a matter of small local importance that the building, owning and operating of the merchant vessels that carry our products shall be the work of our own people? True, this is only incidental and subordinate to the fundamental purpose of creating and maintaining an efficient naval establishment. It is incidental, but it is vastly important in its beneficial results to the entire community.

"It might be necessary to impose burdens upon the country to insure the existence of a complete and necessary auxiliary to our naval establishment. It seems fortunately possible to substitute benefits for burdens by a resort in time of war to an assisted merchant marine for our colliers, transports, etc., etc. Equally important, in such a time of national peril, will be a force of trained seamen and prosperous American shipyards equipped for the best class of construction and repair work.

"How shall this necessary assistance be given? Whatever may be the form finally adopted there is one all-important consideration. Be sure the aid given is sufficient to accomplish the end in view. If any mistake is made it is far better to give too much than too little. Any excessive payment made will find its way back to the people in reduced competitive rates of freight. If you do not give enough aid, your efforts will result in failure and the resort to government aid will then be unjustly condemned as wrong in principle because of a failure consequent upon a niggardly practice. Those who believe in government aid to rehabilitate the merchant marine should not endeavor to drive any hard bargains with those they are seeking to induce to embark their capital and effort in the work; nor should they permit the enemies of the plan, as has happened in the past, to force upon them some form of compromise, sure to result in ultimate failure and discredit to all concerned. Give enough if you give at all.

HOW AID SHOULD BE BESTOWED.

"The result sought cannot be found in a resort to differential customs duties such as have been advocated. The experience of a past century and under the then shipping conditions is absolutely valueless as a guide today. Vessels need revenue in proportion, among other items, to the length of their voyages. Differential duties provide fixed allowances irrespective of the time occupied on the voyage. A dutiable cargo from Cuba, for example, would receive the same aid, under this method, as the same cargo would receive if making the long voyage from the Philippines. Articles varying in value and rate of duty would pay widely varying amounts to the vessel owner under the differential duties plan. If these differences have not yet engaged your attention you will find it an interesting field for your statistician to explore.

"There is one possibility connected with the differential duty proposition that it is believed has not as yet attracted attention and that may be important. It is here suggested for your consideration. While the direct grant of differential duties to American vessel is, as has been briefly explained, open to numerous practical objections, it is believed that there may be no practical objection, treaty or otherwise, to the creation of a special treasury fund to be used in aid of the merchant marine by crediting to such fund a stipulated percentage share of customs duties collected on cargoes carried by American vessels. The fund so collected, and supplemented if necessary, should be distributed upon some just and right plan, but not by payment of the differential duties direct to the particular vessel carrying the cargo they represent.

"Cargo tonnage bonuses have been suggested in the past, but nothing has been heard of them of late and perhaps it is not worth while to occupy your time with any comments upon this form of aid.

"While it is difficult for the average American citizen to recognize that existing treaties with other countries should long be allowed to stand in the way of his obtaining what he wants, it is nevertheless certain that treaties must and will receive your careful attention in their necessary relation to the question before you.

It is unfortunate that every form of government aid to merchant vessels discussed during many years has been described by the public press and accepted by the public generally as a 'subsidy.' Citizens opposed to each particular form of aid proposed have unitedly cried out against 'subsidies.' A concentrated opposition has resulted to the word rather than to the thing it really represents. Some other name may have to be found or invented that will be more generally acceptable. It is doubtless impossible to add anything here to what you have already heard in reference to the practicability of satisfactorily aiding our decaying merchant marine by direct payments to shipyards and subsidies to vessel owners. The writer believes aid should be extended in as simple and concentrated a way as may be possible and to as few great interests. Instead of compensating separately shipyards and shipowners it will be simpler and more effective to extend sufficient aid to the shipowner to enable him to have his vessel built, as he should be required to do, in American shipyards. A general subsidy to all vessels in all classes of trade at anything approaching a common rate is believed to be an undesirable and wasteful method.

"It is here suggested that perhaps it may be best not to endeavor to deal with this important question in a wholesale way. Would it not be wise to endeavor to first decide exactly what it is we, as a people, want? Or rather, while we *may want* the entire vessel carrying service on all the oceans, what is it reasonably possible to get if we may not have it all? This will oblige determining the particular lines of travel where our merchant marine is most needed. For the purposes of illustration, let us suppose that facts submitted by merchants and others oblige you to decide the service worst needed is a direct service between New York and Brazil; that we seem to need a service of say four ships the first year and an addition thereto of two or four ships annually until the entire trade that exists, or can be created, will be properly cared for.

A FEW CONCLUSIONS STATED.

"If the United States government dealt with this proposition as an individual would do, it would clearly describe the service it wanted say between New York and Brazil and it would invite tenders from responsible parties for supplying and operating the vessels required for a stipulated term of years. The government would award the contract, which would include availability in case of war and all postal service needed, to the lowest responsible bidder. It would act similarly upon each line of trade shown desirable to be created or developed. This, it appears, would be a sensible way to proceed. It may be asked whether this would not operate to create a monopoly and cause unnecessarily high rates of freight to be charged for the vessel service. It is safe to say in reply,

that there are no non-competitive ports in the world's markets reached by vessels on the oceans. It would be impossible to burden competitive commerce with unreasonably high charges without diverting it to vessels and markets of other nations. Vessel owners undertaking, under the plan of competitive tenders, the pioneer work are justly entitled during the term of their contracts to reap the reward of their enterprise, even though this should oblige other American vessel owners desiring to compete in these markets to do so without government aid.

"Each important line of travel has attached to it its own peculiar competitive and other conditions, and what may be necessary aid on one line may be too much or too little on another. A wholesale, universal rate of governmental aid, to be successful, must be the rate necessary upon the least favorably situated of all of the routes. The method must certainly be a wasteful one.

"In concluding this hastily prepared record of thoughts upon this important question, and fully recognizing their crude character, they may be summed up briefly, thus:

"1. A proper naval establishment demands an efficient merchant marine, under contract for governmental use in time of war; a body of trained seamen and shipyards well equipped for construction and repair work.

"2. Vessels built in this country, owned and operated by our citizens, will benefit every producing interest in this country.

"3. Some form of United States government aid is recognized to be essential that our merchant ships may be profitably operated on the oceans. Without profit they cannot exist.

"a. Differential customs duties paid directly to vessels carrying the cargoes cannot provide aid as it is needed.

"b. Cargo tonnage duties are not seriously advocated by any who believe in the propriety and efficiency of governmental aid.

"c. Treaties with foreign countries must be considered.

"d. 'Subsidy' is an unpopular name for a possibly necessary form of aid.

"e. The government should find it most economical and satisfactory to obtain exactly what is desired through competitive tenders.

"f. In whatever form aid is given it should be on a liberal and not on a niggardly scale. If it is insufficient, it will result in a failure with discredit to the effort and to all concerned in it."

MR. HADFIELD GETS BESSEMER GOLD MEDAL.

At the annual meeting of the British Iron & Steel Institute, held lately, the Bessemer gold medal for 1904 was presented to Mr. R. A. Hadfield of Sheffield, vice president, for his distinguished services to metallurgy. Mr. Andrew Carnegie, president of the institute, who presented the medal, said there had never been an occasion on which the Bessemer medal had been presented in a greater unanimity on the part of the council or on one which they had a stronger belief that they had found a really worthy recipient of the greatest honor which it was in their power to bestow. Mr. Carnegie said that Mr. Hadfield had a unique establishment in the Hecla works and that there he had achieved a great success, being preeminent in the line he had chosen.

Mr. Hadfield in reply said that he regarded the great honor not merely as a personal one, but also given him as a representative of the great city of Sheffield, from which he had sprung, where more than 140 years ago Huntsman first made steel, and which is still the leading center in the world for the highest quality of material and wide range of special products. As to any merit in his work that the institute had seen fit to consider, he could only say that if merit there were, it was entirely due to persistent hard work.

NEW NAVAL PROGRAM.

Congress at its last session authorized the construction of one battleship, two armored cruisers, three scout cruisers and two fleet colliers. The navy department has now decided to call the battleship New Hampshire, the armored cruisers North Carolina and Montana, the scout cruisers Chester, Birmingham and Salem and the fleet colliers Erie and Ontario. Two sea-going tugs are also to be constructed, but they are not yet named.

The general plans for the battleship will closely approximate those for the Connecticut and Louisiana, but in some respects there will be interesting departures. The value of the submerged torpedo as compared with the above-board installation is recognized in the plans and the latest type of this weapon will be installed. The general dimensions and features of the new battleship are as follows: Length of load water line, 450 ft.; breadth, extreme, at load water line, 76 ft. 10 in.; displacement on trial, not more than 16,000 tons; mean draft to bottom of keel at trial displacement, 24 ft. 6 in.; gross draft, full load, about 26 ft. 9 in.; total coal bunker capacity, about 2,200 tons; coal carried on trial, 900 tons; feed water carried on trial, 66 tons.

The main battery of the battleship will consist of four 12-in., eight 8-in. and twelve 7-in. breech loading rifles, while the secondary battery will include twenty 3-in. 14-pounder rapid fire guns, twelve 3-pounder semi-automatic guns, six 1-pounder automatic guns, two 1-pounder semi-automatic guns, two 3-in. field pieces, two machine guns, calibre .30, and six automatic guns, calibre .30. The battery, both main and secondary, is still subject to modifications, but no change in the total weights is likely to be made. The engines will be of the vertical twin screw four-cylinder triple expansion type, aggregating 16,500 H. P., and each engine will be located in a separate water-tight compartment. There will be twelve water-tube boilers, probably of the Babcock & Wilcox type, placed in six water-tight compartments. A well equipped machine shop will be installed, the tools to be run by electric motors.

The two first-class armored cruisers will be built after the general plans of the Pennsylvania and class, but a number of changes will be made to bring the equipment up to the latest approved naval practice. As in the case of the battleship, submerged torpedo tubes will be installed in the cruisers, and electric motors will be employed for the operation of auxiliaries and machinery wherever possible. The general dimensions of these vessels will be approximately as follows: Length on load water line, 502 ft.; breadth, extreme, at load water line, about 70 ft.; trial displacement, about 13,800 tons; mean draft at trial displacement, about 24 ft. 6 in.; greatest draft, full load, about 26 ft. 6 in.; total coal bunker capacity, 2,000 tons; coal carried on trial, 900 tons; feed water carried on trial, 75 tons; speed, not less than 22 knots.

The batteries of the cruisers have not yet been completely worked out, but will not differ greatly from those of the Pennsylvania and class, which included four 8-in. guns, fourteen 6-in. guns, eighteen 14-pounders, twelve 3-pounders, four 1-pounder guns, four 1-pounder rapid fire guns, two 3-in. field guns, two machine guns and six calibre .30 automatic guns.

Specifications for the colliers require the vessels to be capable of the whole fleet to carry 5,000 tons of cargo coal and to have a trial speed of not less than 16 knots. They are to cost approximately $2,150,000 each. It is provided that these colliers should be built in the navy yards, but aside from the Brooklyn navy yard none of the yards has slips sufficient for the construction of these vessels. A circular letter has therefore been forwarded to the commandant of each of the large navy yards to furnish the department with a statement of the facilities of the yard. Congress also failed to provide a special appropriation for the construction of the colliers, and this is also a feature which is perplexing the secretary of the navy.

SEEN AND HEARD ON THE LOOKOUT.

It often happens that a simple, truthful statement conveys an undesirable impression. For instance, a captain once entered in his log book, "The mate was drunk to-day," and the latter thereupon wrote the equally truthful information that, "the captain was sober to-day." Only when it is understood that this captain was sober every day, dare I state that "I went to church last Sunday." It being unnecessary to mention common occurrences it should further be known that the church visited on the occasion alluded to is exclusively for seamen and their friends, and, like a certain soap, "it floats." Perhaps on the principle that birds of a feather flock together, it was noticed that seafaring men do not care to attend services when the majority of the congregation consists of landlubbers. In such places seamen felt out of keeping with their surroundings; like cats in a strange warehouse, as it were. Then also a great deal of shipping in New York harbor, for instance, is anchored far off shore, and the prospect of rowing a heavy yawl did not prove a suitable inducement to increase the number of church-going seamen. A missionary society for seamen in New York city evidently holds the same opinion as the man who, when accosted by his wife with, "It is shameful to let me go to church alone every Sunday morning," replied: "Oh, I don't know; you might go to worse places." And to prevent the greatest number of seamen from visiting these "worse places" the society launched their floating church. Every Sunday morning a steam launch visits the vessels at anchor down the bay, and free transportation to and from this most unique place of worship is offered the crews. During the service a great deal of suspicious nodding of heads could be noticed. However, "honi soit qui mal y pense," for said nodding was not the result of untimely visits from morpheus, superinduced by the length and inartistic quality of the sermon, but was caused by the motion of the church at times when passing tugs and ferry boats rudely disturbed the placidity of the water in the slip. In fact, there were moments when the congregation had, like Rudyard Kipling's rivets, "to sit tight, and hold fast." It has been said that anyone desirous of beating a dog can readily procure a stick, but an excuse for refusing to visit this floating church is difficult to find. Some sailors whose stick took the form of a doubt of the launch's ability to return in time for the next meal were promptly invited to dinner in the society's boarding house. Not so very many years ago a shore-going seaman was only deemed fit to be robbed of whatever he chanced to possess. Now there are churches and numerous places of entertainment exclusively for mariners, and where the warmth of the welcome extended is in inverse ratio to the amount of the patron's possessions.

Neither modern sanitary methods, an extended knowledge of the habits of microbes, nor the most efficient germ eradicator can ever make a health resort of East Indian countries. The possession of the Philippine islands compels America to maintain a permanent naval force in the far east. For a comparatively long time the crews of these war vessels must live in a region where the atmosphere refuses to conduce to the health of white human beings. Then why not permit natives of this land of the red hot sun to carry the white men's burden on certain occasions. The Dutch government keeps numerous war vessels in the vicinity of Java, Sumatra, Borneo and Celebes. The white men remain three years in the tropics. But on board all of these vessels are natives who have volunteered to serve for a period of five years. These Malay sailors and firemen never pass the Suez canal or round Cape of Good Hope, but for doing the white men's work during certain hours of the day they prove more beneficient than expensive pills and powders. Unlike parrots and monkeys, these natives cannot be said to eat almost anything. Pork must never be found on their bill of fare, and meat only at rare intervals. The Dutch naval authorities have prepared a "menu" which appears to satisfy the palates of their Malay crews. Rice and curry, coffee and unlimited sugar, bread—Breakfast. Dinner—Some kind of soup, a porridge of a certain disgustingly sweet native cereal, and bread. Supper—Bread, native peppers known as "lombok," and a foul smelling dried fish that rejoices in the name of "ikam spat." For the storing of the latter "bonne bouche" an iron tank has been installed on each man-of-war stationed in the east. With the exception of shoes the Malay sailor's outfit is similar to that of his white confrere. Noticing on one occasion that some natives wore shoes, I was told that these Malays had the distinction of having been born on the island of "Ambona." It appears that years ago when the process of benevolent assimilation was being strenuously prosecuted the Dutch men-of-war met armed opposition everywhere except in the island of Ambona. The natives of said island shouted "ambon"—mercy—and their descendants, or such of them as care to enlist in the navy, are graciously permitted to wear shoes—"all the same white men." Rice, dried fish and broiling sun are the most inexpensive and easily accessible commodities in East India. This being also a combination upon which a Malay thrives and grows fat, it is to be expected that Philippine sailors and firemen may soon be considered a necessary adjunct to every American man-of-war sojourning in the neighborhood of the new dependencies. Besides, as a means of efficient assimilation, nothing better can be devised than countless numbers of natives proudly wearing the conqueror's uniforms.

The larger of the transatlantic passenger boats are becoming veritable floating cities. Only occasionally and when in a most angry mood can Neptune slightly disturb the equanimity of the more timid passengers. Sailors have been transformed into street cleaners; some of the best butchers and bakers follow their calling afloat; a doctor has long been regarded as a necessity on these steamers, and now each of the 30,000 passengers that is afloat between the old and the new world may presently expect to find a copy of the "ocean daily" near his, or her, plate at the breakfast table every morning. It is proposed to place typesetting machines, a stereotyping plant, and a press on board every steamer that is equipped with a Marconi apparatus. Several of these steamers have already issued a daily bulletin of news, but the newspapers here referred to will be under the control of one publisher. The business offices and editorial rooms will be either in England or America, and the printing of the advertising matter can also be done ashore. Before a steamer starts on her trip a load of paper—partly blank and partly covered with advertisements—will be delivered on board. The managing editor of the "ocean daily" gives his final instructions to the subeditor in charge of this steamer's edition, and the passengers can be assured that anything of importance happening during the night will be communicated to the ship's main truck in the vernacular of Marconi; translated by an expert in this garment of thought, set up, printed, and by the time the steward rings the breakfast bell the first edition of the paper is ready for perusal. During the first couple of days of a steamer's eastward trip the news can be sent from the Associated Press offices in New York, and during the remainder of the voyage the dispatches may arrive from Europe. According to Edgar Saltus "everything is possible," and even the publishing of a daily paper in mid ocean can no more be regarded as an improbability. Said paper is assured a circulation of 20,000 daily, and those who have discovered a cure for seasickness are expected to offer fabulous sums for advertising space. Some years ago it was said that we traveled no longer—we only arrived—and the only pleasure in arriving was to read the papers. And now one may as well remain at home.

F. H.

WANTED and FOR SALE Department.

FOR SALE.

Steam Barge J.G. Nichols.

Length 106 ft., beam 22 ft.
Engine 10 by 20 by 11.
Boiler 8 ft. 6 in long, 48 in. dia.
Steam pressure 137 lbs.
Engine and boiler in first-class shape. Steam hoister and derrick forward.
Will sell cheap to quick buyer.
Address Walter V. Metcalf, 93 Eliot St., Cleveland. July 7

For Sale.

All my stock in the Chequamegon Bay Transportation Co., 75 shares; good established business Reason for selling—going west. Address, Box 343, Ashland, Wis. July 28

FOR SALE.

Dump Scow for Sale.

Built of full length fir timber, 264 yards. For particulars enquire of Hickler Bros., Sault Ste Marie, Mich. tf

Yacht for Sale.

Yacht, perfect beauty, for sale at $1,350; length, 40 ft.; beam, 7 ft. Draught aft about 34 in., forward about 9 in., amidships about 18 in. For full particulars address Box 66, Marine Review, Cleveland. tf

Yacht for Sale.

New beautiful 100-ft. steam yacht, fully equipped. Owner physically unable to use yacht. Will sell for any reasonable offer. Yacht can be seen in Detroit. Address M. J. Steffens, 57 East Twenty-second st., Chicago. tf

WANTED.

Wanted to Buy or Charter.

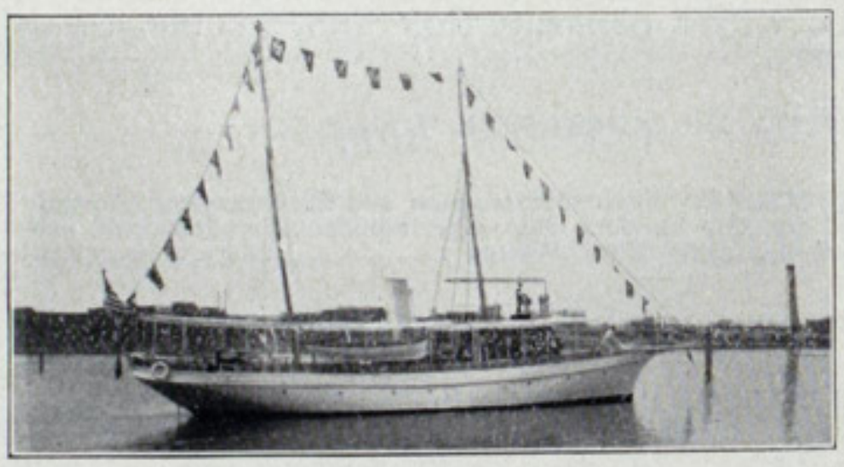
Passenger and freight boat about 125 to 150 ft. long to carry about 500 passengers. Address Box 67, Marine Review, Cleveland. June 23

Steamboat Wanted.

Wanted—A steamboat about 100 to 130 ft. keel, suitable for passengers and freight. To run 12 to 16 miles per hour. Give full particulars as to age, depth, beam, engine, etc. James Purvis, Gore Bay, Ont. July 21

PROPOSALS FOR DREDGE.—Mississippi River Commission, Fullerton Building, St. Louis, Mo, May 17, 1904.—Sealed proposals, in triplicate, for construction and delivery of self-propelling hydraulic dredge and ponton pipe line will be received here until 12 noon, standard time, June 25, 1904, and then publicly opened. Information furnished on application. WM. B. LADUE, Capt., Eng'rs. Sec'y. June 23

FOR SALE—The Union Transit Co.'s package freight steamer John M. Nichol. Rated A1½; length 263 ft., beam 41 ft, depth 26 ft. Triple expansion engines with 900 indicated H. P Steel boiler house enclosing two Scotch boilers with steam pressure of 150 lbs. Steam capstans, windlass and steering apparatus. About $30,000 laid out for repairs in the past year. Retiring from business and will sell at sacrifice. Address H. C. French, 994 Ellicott Square, Buffalo, N. Y. June 16



Steam Yacht Catherine.

FOR SALE—Length 78 ft., beam 18 ft, triple expansion engines, water tube boiler, allowed 200 lbs; electric light, search light, mahogany deck house 9 by 16 power launch, complete outfit, all in first-class condition. One of the best family cruising yachts on the Lakes Inquire Wickes Bros, Saginaw, Mich.

Cast Steel Pipes.

We have especial facilities for making and finishing steel pipes, crosses and tees and special fittings, to stand heavy pressures and up to ten feet in diameter. Our metal averages about 70,000 pounds tensile.

Open Hearth Steel Castings for locomotives shipbuilding, electrical, pump and general machinery purposes Subject to U. S. Government, Lloyd's, Railroad and other specifications.

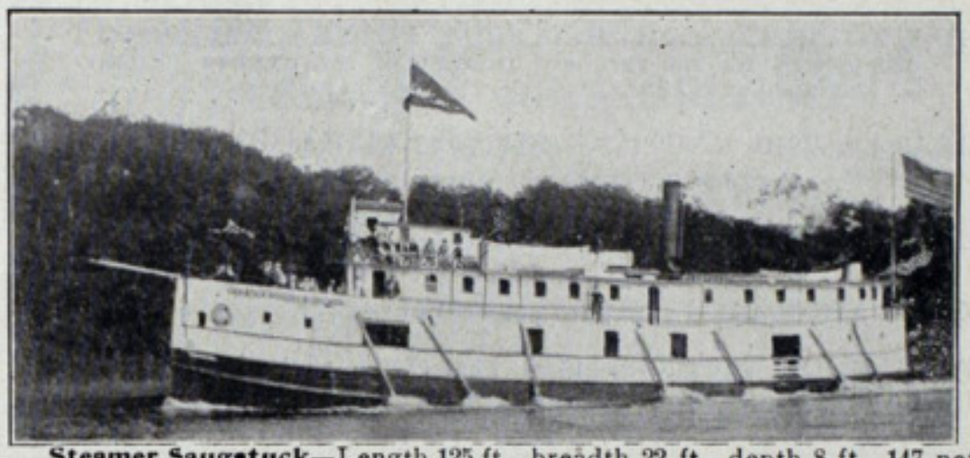
Rail or Water Deliveries.

Seaboard Steel Casting Company,

Chester, Pa.

Chicago, Saugatuck & Douglas Trans. Co.

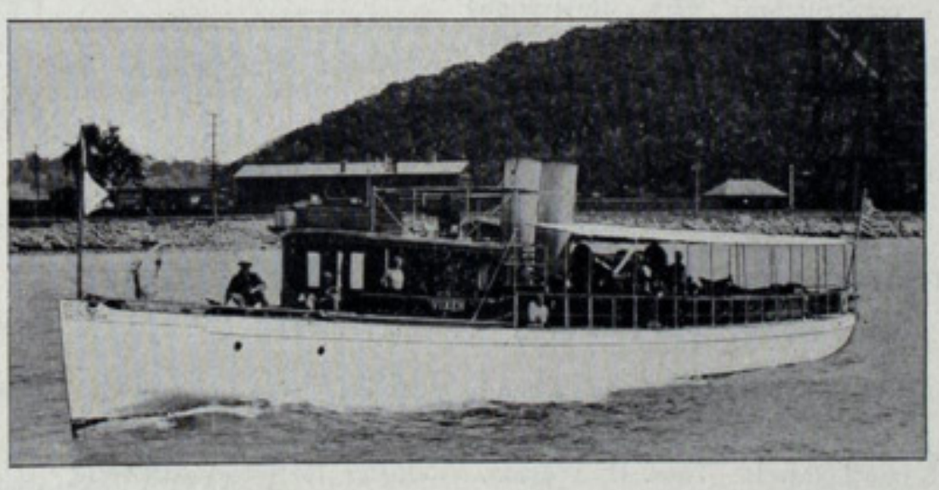
This boat line, two steamers, docks, etc., for sale.



Steamer Saugatuck—Length 125 ft., breadth 22 ft., depth 8 ft., 147 net tons. Licensed to carry 84 regular, 225 excursion passengers.

Steamer Chas. McVea—Length 135 ft, breadth 24 ft., depth 10 ft., 263 net tons. Licensed to carry 91 regular, 300 excursion passengers.

For full particulars apply to Griffin & Henry, Saugatuck, Mich. June 16



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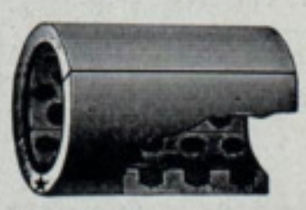

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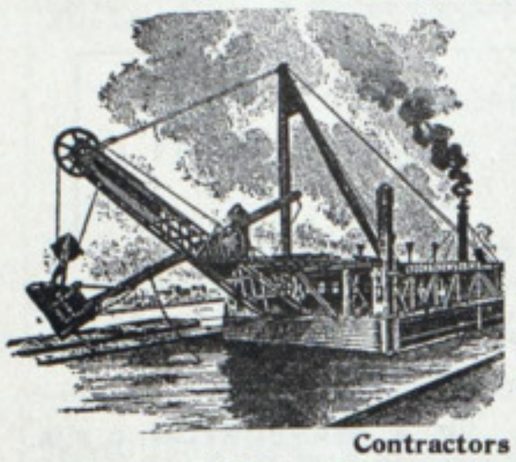

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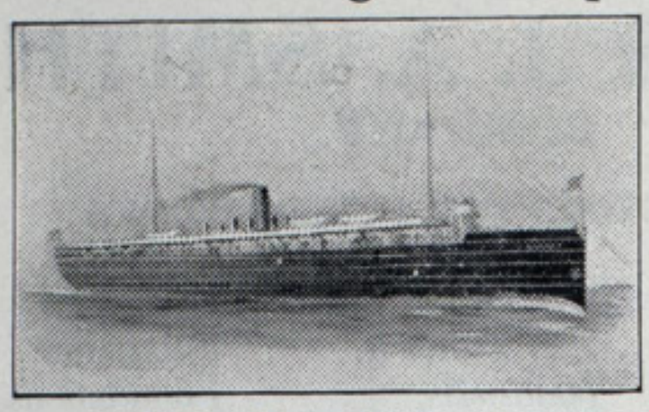

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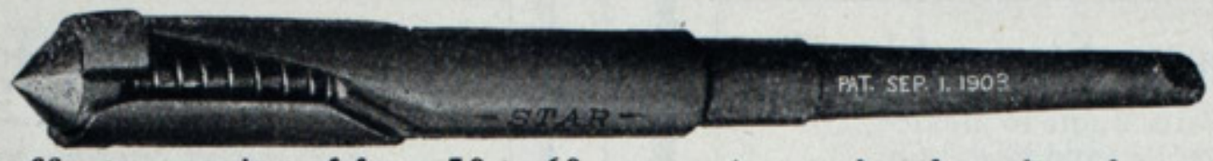

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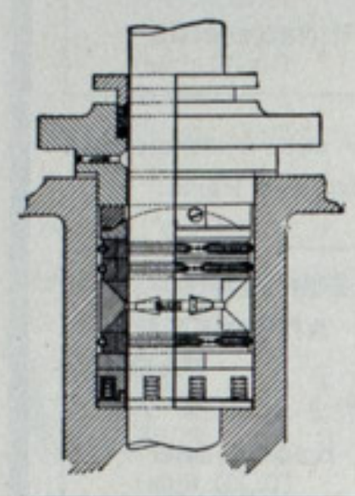

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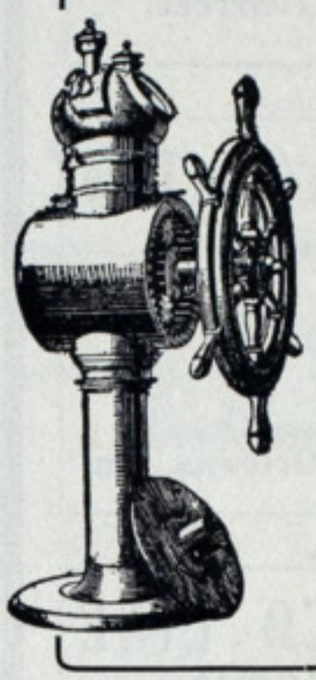

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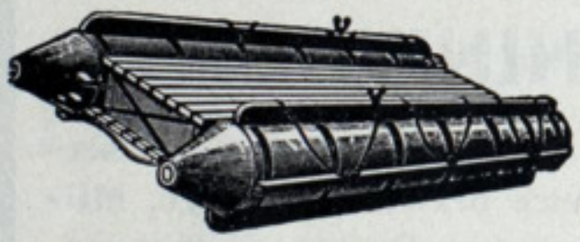

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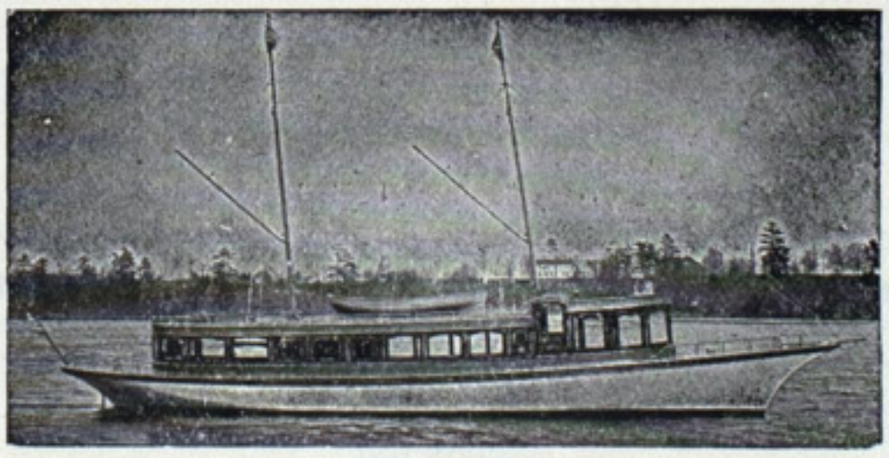

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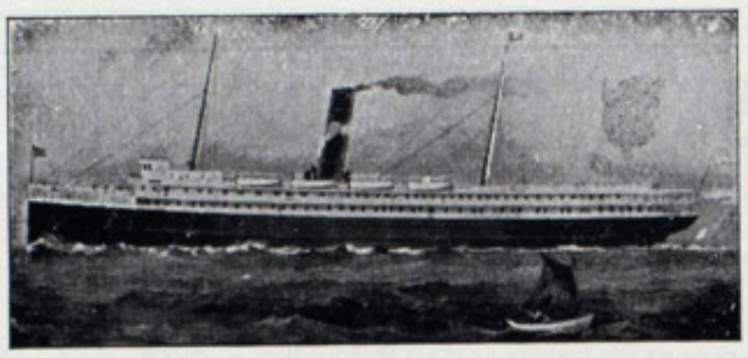

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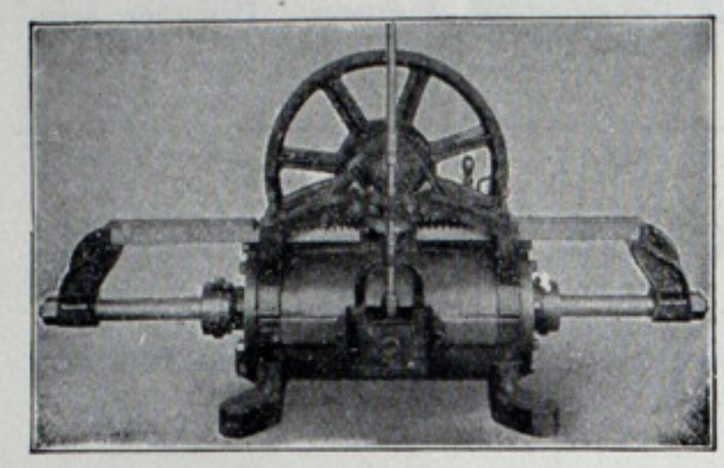

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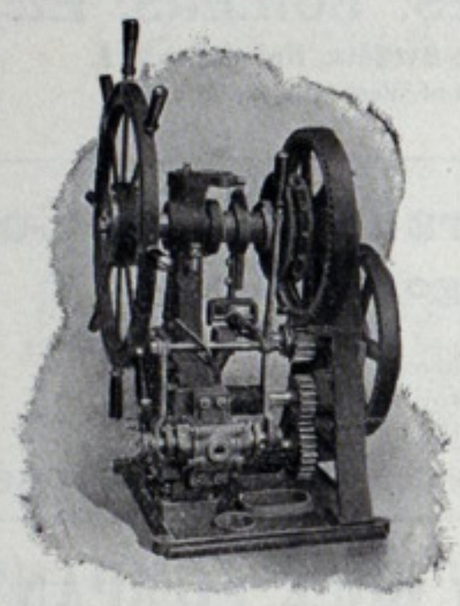

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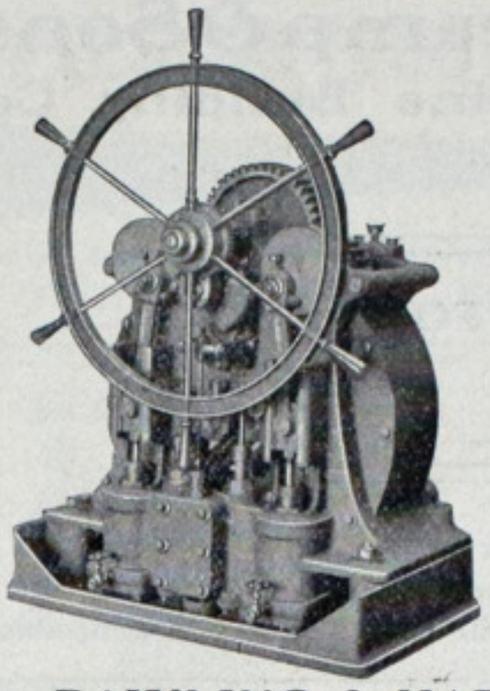

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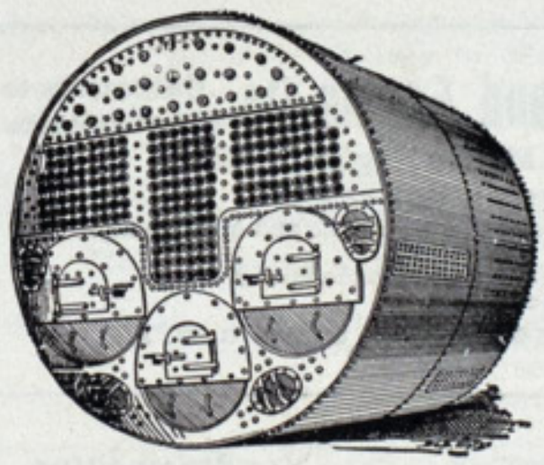

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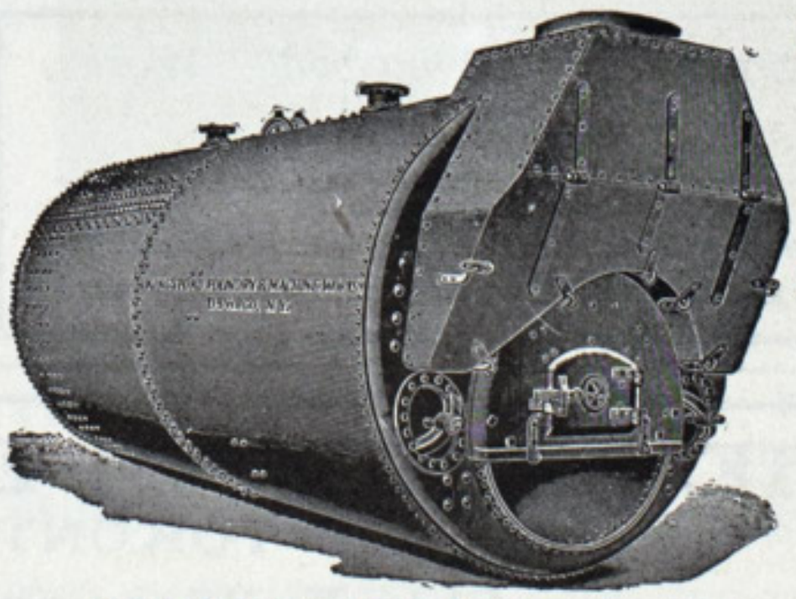

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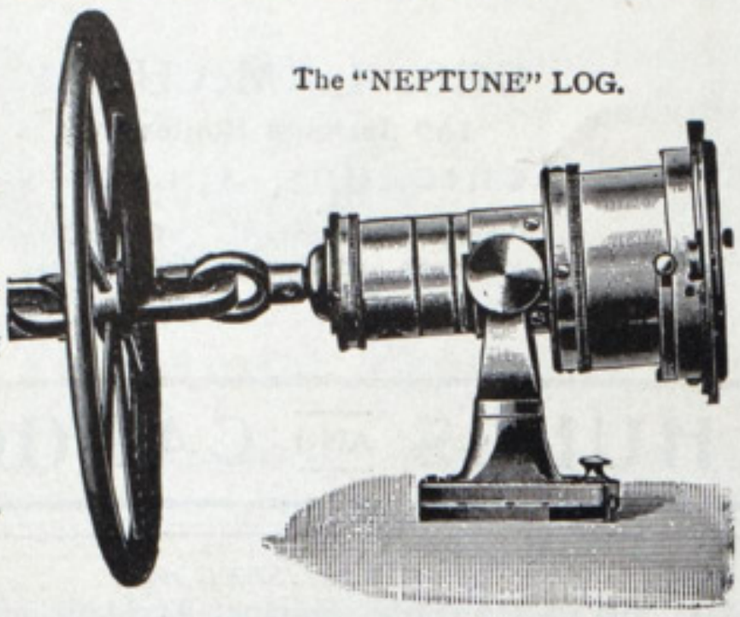

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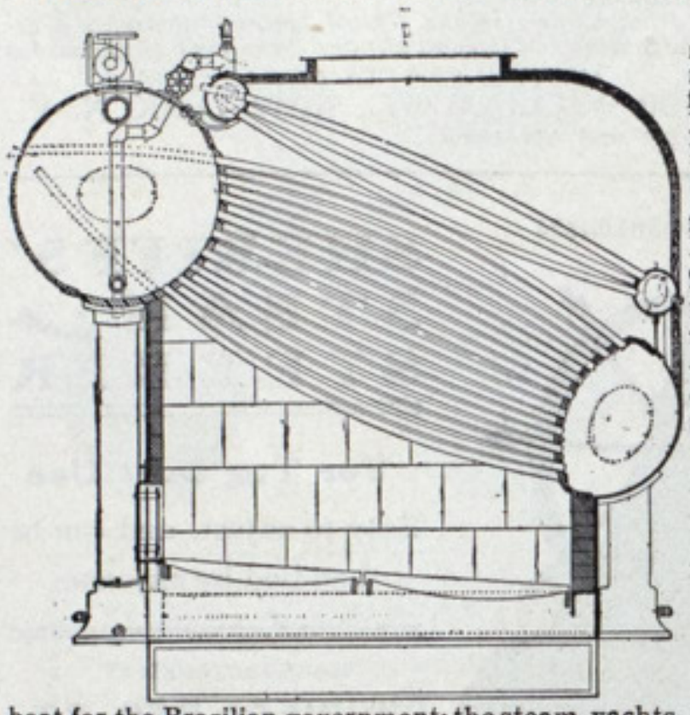

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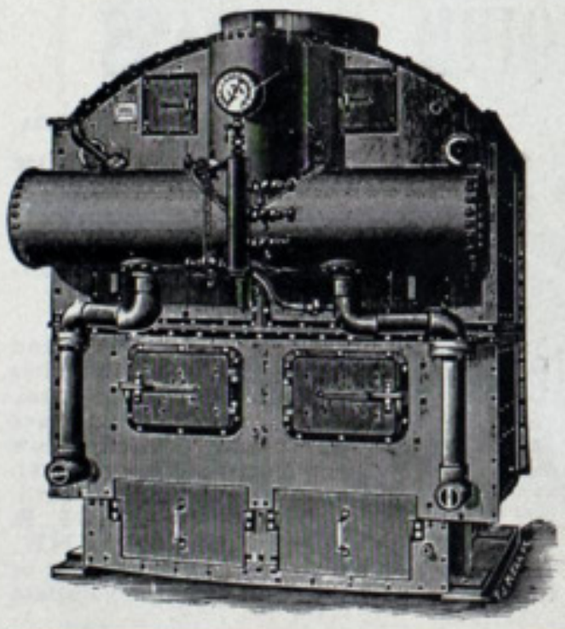

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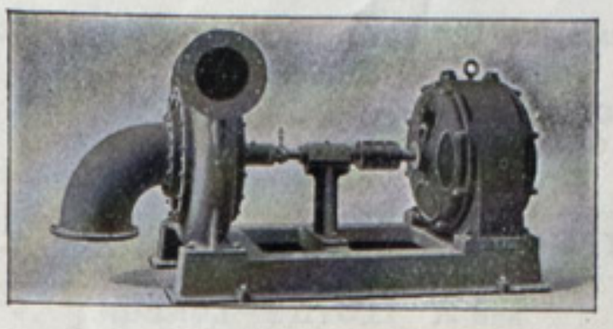

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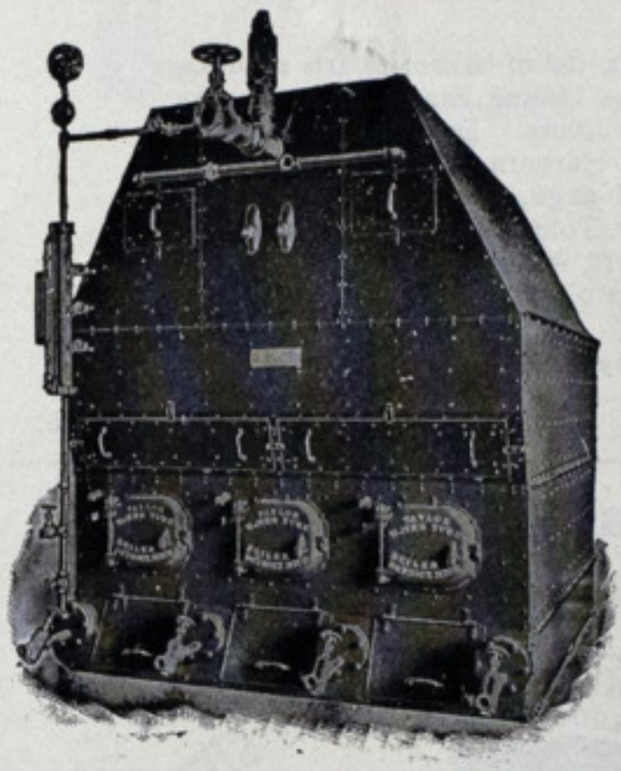

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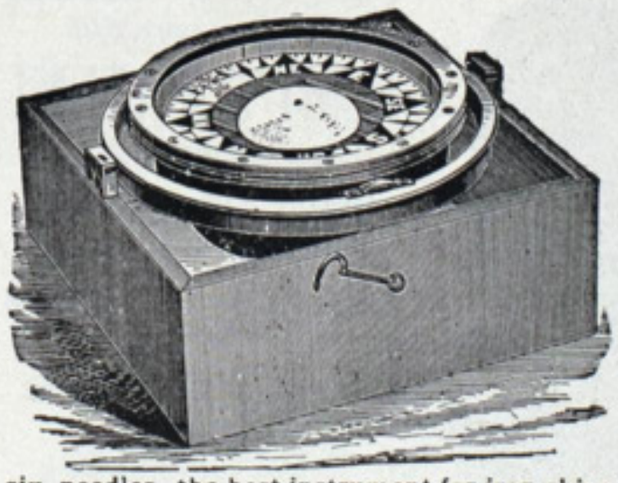

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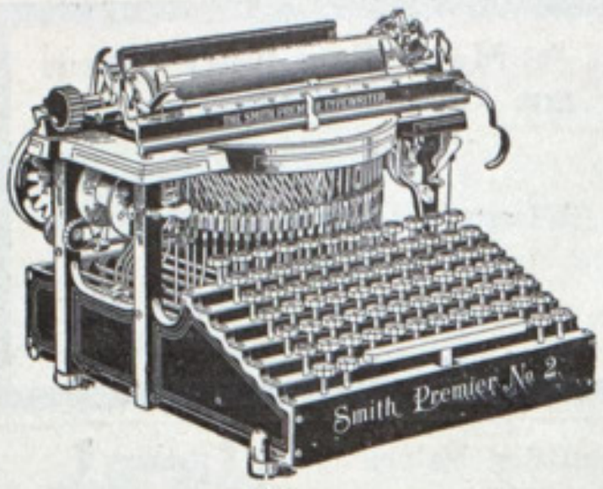

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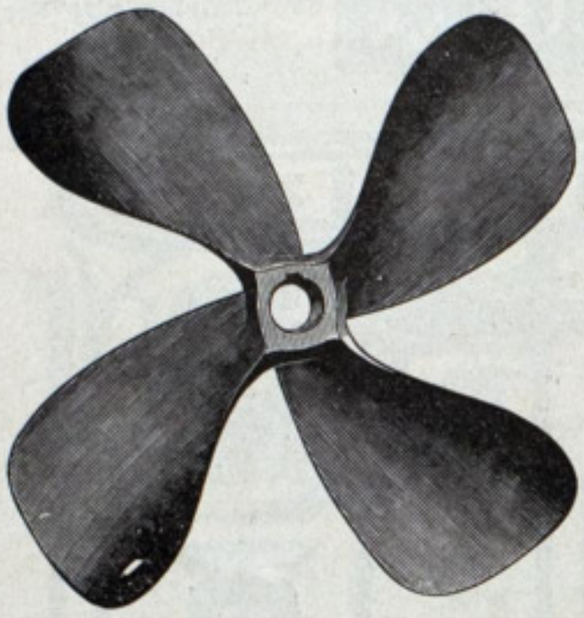

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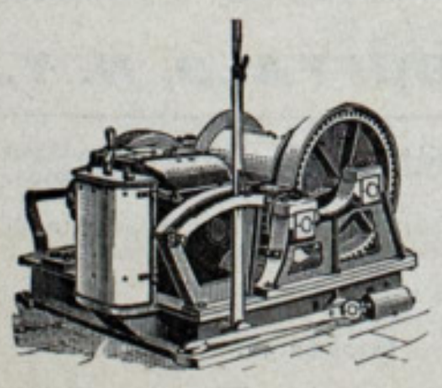

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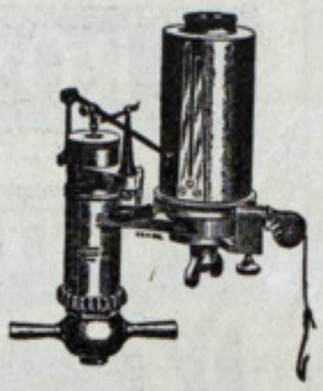

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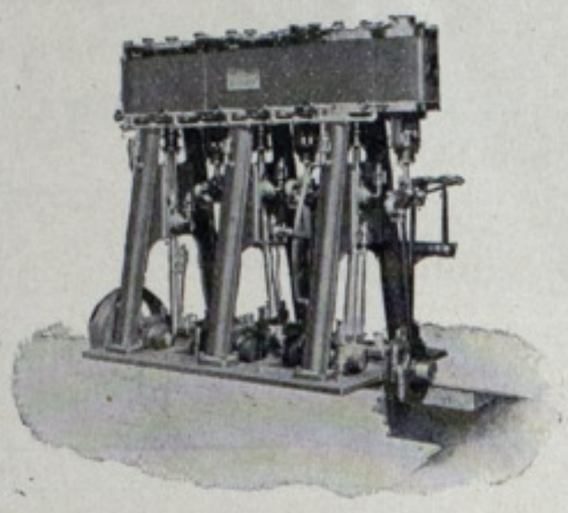

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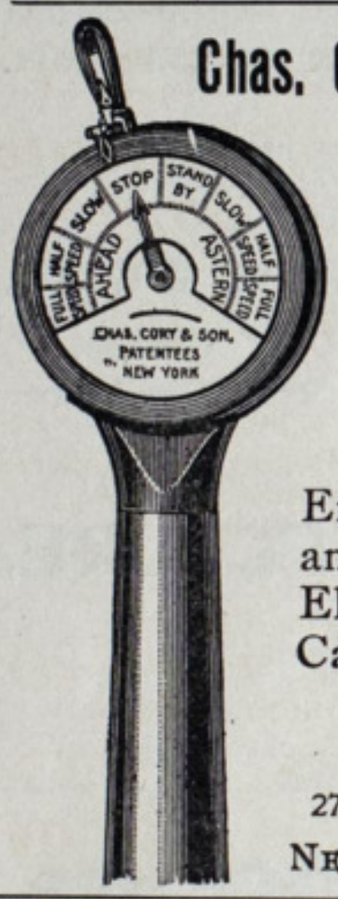

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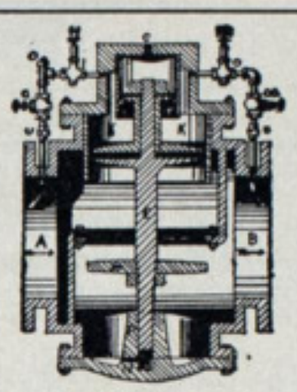

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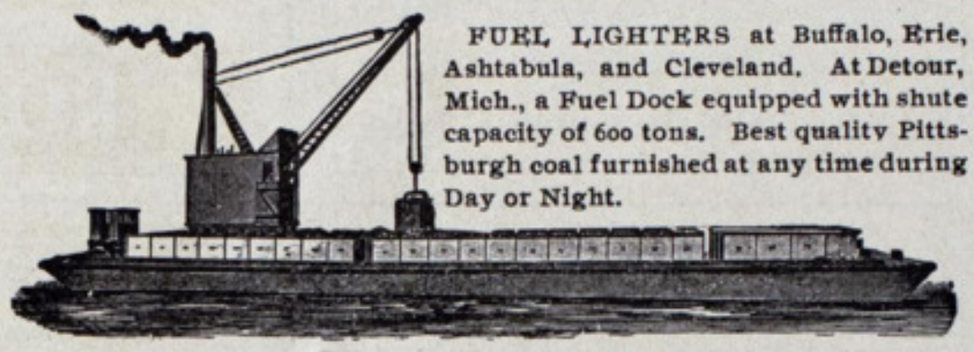

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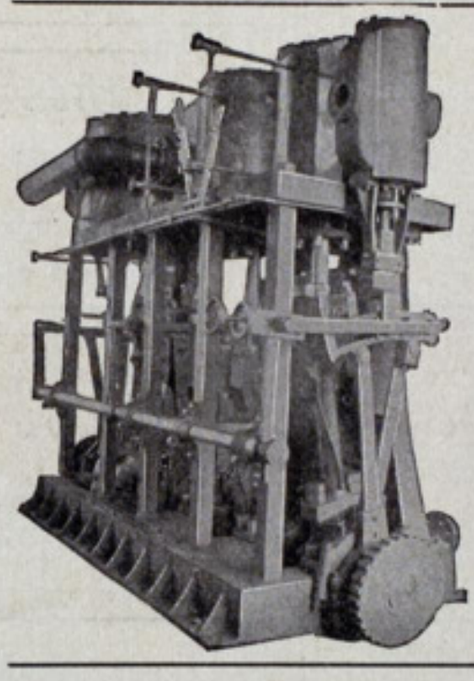

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Pickands, Mather & Co.....Cleveland.

LAUNCHES—STEAM, NAPHTHA, ELECTRIC.

Georgian Bay Engineering Works.....
..... Midland, Ont.
Marine Construction & D. D. Co.....
.....Mariner's Harbor, S. I., N. Y.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P.....Chicago.

LIFE PRESERVERS, LIFE BOATS, BUOYS.

Armstrong, Cork Co.....Pittsburg.
Drein, Thos. & Son.....Wilmington, Del.
Kahnweiler's Sons, D. .....New York

LIGHTS, SIDE AND SIGNAL.

Russell & Watson .....Buffalo.

LOGS.

Walker & Sons, Thomas ....Birmingham, Eng.
Also Ship Chandlers.

LUBRICATING GRAPHITE.

Dixon Crucible Co., Joseph..Jersey City, N. J.

LUBRICATORS.

Crane Co. .....Chicago.
Lunkenheimer Co. .....Cincinnati.

LUMBER.

Martin-Barriss Co.....Cleveland.
Shurick, F. S.....New York.

MACHINISTS.

Chase Machine Co.....Cleveland.
Gogebic Steam Boiler Works....Duluth, Minn.
Hickler Bros. .....Sault Ste. Marie, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Union Machine & Boiler Co.....Cleveland.

MACHINE TOOLS (WOOD WORKING).

Atlantic Works, Inc.....Philadelphia.

MARINE RAILWAYS.

Hickler Bros. .....Sault Ste. Marie, Mich.

MARINE GLUE.

Ferdinand & Co., L. W.....Boston, Mass.

MARINE RAILWAYS, BUILDERS OF.

Crandall & Son, H. I....East Boston, Mass.

MATTRESSES, CUSHIONS, BEDDING.

Fogg, M. W.....New York.

MECHANICAL DRAFT FOR BOILERS.

American Ship Building Co.....Cleveland.
Detroit Ship Building Co.....Detroit.
Great Lakes Engineering Works ..Detroit.
Sturtevant, B. F. Co.....Boston.

MELTING POT AND PAYING LADLE.

(For Paying Seams of Decks with Marine Glue.)

Ferdinand & Co., L. W.....Boston.

METALLIC PACKING.

Katzenstein, L. & Co.....New York.
U. S. Metallic Packing Co.....Philadelphia.

METAL POLISH.

Bertram's Oil Polish Co.....Boston

MOTORS, GENERATORS—ELECTRIC.

General Electric Co.....Schenectady, N. Y.
Bayley & Sons Co., Wm.....Milwaukee, Wis.
Sturtevant, B. F. Co.....Boston.
Westinghouse Electric & Mfg. Co.....
..... Pittsburg, Pa.

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NAUTICAL INSTRUMENTS.
Ritchie, E. S., & Sons.....Brookline, Mass.

NAVAL ARCHITECTS.
Hynd, Alexander .....Cleveland.
Kidd, Joseph.....Duluth, Minn.
Lovejoy, H. O.....Buffalo.
Matteson & Drake.....Philadelphia.
Mosher, Chas. D.....New York.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Sadler, Perkins & Field.....New York.
Steel, Adam .....Cleveland.
Wood, W. J.....Chicago.

OAKUM.
DeGrauw, Aymar & Co.....New York.
Stratford, Oakum Co.....Jersey City, N. J.

OIL FOR PAINTING.
Sipe & Co., James B.....Allegheny, Pa.

OIL ENGINES.
Mietz, Aug. .....New York.

OILS AND LUBRICANTS.
Dixon Crucible Co., Joseph..Jersey City, N. J.
Standard Oil Co.....Cleveland.

PACKING.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Katzenstein, L. & Co.....New York.
New York Belting & Packing Co...New York.
United States Metallic Packing Co. Philadelphia.

PACKING TOOL.
Matteson & Drake .....Philadelphia.

PAINTS.
Baker, Howard H. & Co.....Buffalo.
Detroit Varnish Co.....Detroit.
Detroit White Lead Works.....Detroit.
Forest City Paint and Varnish Co..Cleveland.
New Jersey Zinc Co.....New York.
Sipe & Co., James B.....Allegheny, Pa.
Upson-Walton Co. .....Cleveland.

PATTERN SHOP MACHINERY.
Atlantic Works, Inc.....Philadelphia.

PILE DRIVING AND SUBMARINE WORK.
Buffalo Dredging Co.....Buffalo.
Chicago & Gt. Lakes Dredge & Dock Co.. ..... Chicago.
Dunbar & Sullivan Dredging Co.....Buffalo.
Fitz-Simons & Connell Co.....Chicago.
Hickler Bros. .....Sault Ste. Marie, Mich.
Parker Bros. Co., Ltd.....Detroit.
Smith Co., L. P. & J. A.....Cleveland.
Starke Dredge & Dock Co., C. H...Milwaukee.
Sullivan, M. .....Detroit.

PIPE, WROUGHT IRON.
Bourne-Fuller Co.....Cleveland.
Crane Co. .....Chicago.
Macbeth Iron Co.....Cleveland.

PLANING MILL MACHINERY.
Atlantic Works, Inc.....Philadelphia.

PLATES—SHIP, STRUCTURAL, ETC.
Bourne-Fuller Co. .....Cleveland.
Otis Steel Co.....Cleveland.

PNEUMATIC TOOLS.
Allen, John F.....New York.

POLISH FOR METALS.
Bertram's Oil Polish Co.....Boston.

PRESSURE REGULATORS.
Kieley & Mueller .....New York.
Ross Valve Co.....Troy, N. Y.

PROPELLER WHEELS.
American Ship Building Co.....Cleveland.
Atlantic Works .... East Boston, Mass.
Cramp, Wm. & Sons.....Philadelphia.
Detroit Ship Building Co.....Detroit.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.. Detroit.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Macbeth Iron Co.....Cleveland.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co..... .....Newport News, Va.
Phosphor Bronze Smelting Co., Ltd..... ..... Philadelphia.
Risdon Iron Works .....San Francisco.
Roelker, H. B. .....New York.
Sheriffs Mfg. Co.....Milwaukee.
Superior Ship Building Co....Superior, Wis.
Thropp & Sons Co., J. E.....Trenton, N. J.
Trout, H. G.....Buffalo.
United States Ship Building Co....New York.

PROJECTORS, ELECTRIC.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co..... ..... Pittsburg, Pa.

PUMPS FOR VARIOUS PURPOSES.
Blake, Geo. F., Mfg. Co.....New York.
Great Lakes Engineering Works Detroit.
Kingsford Foundry & Machine Works.... ..... Oswego, N. Y.

PUNCHES, RIVETERS, SHEARS.
Allen, John F. .....New York.

RANGES.
Russell & Watson .....Buffalo

REFRIGERATING APPARATUS.
Great Lakes Engineering Works.....Detroit.
Roelker, H. B. .....New York.

REGISTER FOR CLASSIFICATION OF VESSELS.
Great Lakes Register .....Cleveland.
Record of American & Foreign Shipping.. .....New York.

REPAIRS—ENGINE AND BOILER.
(See also Boiler Manufacturers and Engine Builders.)

Georgian Bay Engineering Works..... .....Midland, Ont.
Gogebic Steam Boiler Works....Duluth, Minn.
Marine Iron Co.....Duluth, Minn.
Forest City Boiler Co.....Cleveland.

RIVETING MACHINES.
Allen, John F.....New York.

RIVETS, STEEL, FOR SHIPS AND BOILERS.
Bourne-Fuller Co.....Cleveland.

SAFETY VALVES.
American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co.....Boston.
Crane Co. .....Chicago.
Hayden Mfg. Co., N. L.....Columbus, O.
Lunkenheimer Co. .....Cincinnati.

SAIL MAKERS.
Baker, Howard H. & Co.....Buffalo.
Upson-Walton Co.....Cleveland.
Wilson & Silsby .....Boston.

SALVAGE COMPANIES.
See Wrecking Companies.

SEARCH LIGHTS.
General Electric Co.....Schenectady, N. Y.
Westinghouse Electric & Mfg. Co..... .....Pittsburg, Pa.

SHEARS.
See Punches, Rivets, and Shears.

SHIP AND BOILER PLATES AND SHAPES.
Bourne-Fuller Co.....Cleveland.
Otis Steel Co.....Cleveland.

SHIP BUILDERS.
American Ship Building Co.....Cleveland.
Atlantic Works .....East Boston, Mass.
Bertram Engine Works Co., Ltd.Toronto, Can.
Buffalo Dry Dock Co.....Buffalo.
Cramp, Wm. & Sons.....Philadelphia.
Craig Ship Building Co.....Toledo, O.
Chicago Ship Building Co.....Chicago.
Detroit Ship Building Co.....Detroit.
Fore River Ship & Engine Co..Quincy, Mass.
Great Lakes Engineering Works.....Detroit.
Jenks Ship Building Co....Port Huron, Mich.
Lockwood Mfg. Co.....East Boston, Mass.
Manitowoc Dry Dock Co.....Manitowoc, Wis.
Milwaukee Dry Dock Co.....Milwaukee.
Newport News Ship Building Co..... .....Newport News, Va.
Risdon Iron Works.....San Francisco.
Roach's Ship Yard .....Chester, Pa.
Shipowner's Dry Dock Co.....Chicago.
Smith & Son, Abram.....Algonac, Mich.
United States Ship Building Co..New York.
Willard, Chas. P. & Co.....Chicago.

SHIP CHANDLERS.
Baker, Howard H. & Co.....Buffalo.
Marine Mfg. & Supply Co.....New York.
Upson-Walton Co.....Cleveland.

SHIP LANTERNS AND LAMPS.
Russell & Watson .....Buffalo.

SHIP TIMBER.
Martin-Barriss Co.....Cleveland.

SMOOTH-ON COMPOUND, FOR REPAIRS.
Smooth-On Mfg. Co.....Jersey City, N. J.

STAYBOLTS, IRON OR STEEL, HOLLOW OR SOLID.
Falls Hollow Staybolt Co..Cuyahoga Falls, O.

STEAM VESSELS FOR SALE.
Elwell, Jas. W. & Co.....New York.
Gilchrist & Co., C. P. .....Cleveland.
Holmes, Samuel .....New York.
McCarthy, T. R.....Montreal, Can.
Weeks, F. H.....New York.

STEAMSHIP LINES, PASS. AND FREIGHT.
American Line .....New York.
Anchor Line .....Buffalo.
Erie & Western Trans. Co.....Buffalo.
Goodrich Trans. Co.....Chicago.
International Mercantile Marine Co..... ..... Philadelphia.
Manitou Steamship Co.....Chicago.
Mexican-American S. S. Co..New Orleans, La.
Niagara, St. Catharines & Toronto Ry. & Nav. Co. .....St. Catharines, Ont.
Northern Michigan Trans. Co.....Chicago.
Red Star Line .....New York.
United Fruit Co .....Boston.

STEEL CASTINGS.
Macbeth Iron Co.....Cleveland.
Otis Steel Co.....Cleveland.
Seaboard Steel Casting Co.....Chester, Pa.

STEERING APPARATUS.
American Ship Building Co.....Cleveland.
Chase Machine Co.....Cleveland.
Dake Engine Co.....Grand Haven, Mich.
Detroit Ship Building Co.....Detroit.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co....Port Huron, Mich.
Marine Mfg. & Supply Co.....Cleveland.
Moulton Steering Engine Co.....New York.
Pawling & Harnischfeger .....Milwaukee.
Sheriffs Mfg. Co.....Milwaukee.

SUBMARINE DIVING APPARATUS.
Morse & Son, A. J.....Boston.
Schrader's Son, A.....New York.

SURVEYORS, MARINE.
Gaskin, Edward .....Buffalo.
Hynd, Alexander .....Cleveland.
Lovejoy, H. O.....Buffalo.
Matteson & Drake .....Philadelphia.
Parker Bros. Co., Ltd.....Detroit.
Nacey, James .....Cleveland.
Rice, Henry .....Buffalo.
Steel, Adam .....Cleveland.
Wood, W. J.....Chicago.

TESTS OF MATERIALS.
Hunt, Robert W. & Co.....Chicago.
Pittsburg Testing Laboratory, Ltd....Pittsburg.

TILING, INTERLOCKING RUBBER.
New York Belting & Packing Co...New York.

TOOLS, METAL WORKING, FOR SHIP AND ENGINE WORKS.
Allen, John F.....New York.
Watson-Stillman Co.....New York.

TOOLS, WOOD WORKING.
Atlantic Works, Inc.....Philadelphia.

TOWING MACHINES.
American Ship Windlass Co..Providence, R. I.
Chase Machine Co.....Cleveland.

TOWING COMPANIES.
Donnelly Salvage & Wrecking Co..... .....Kingston, Ont.
Great Lakes Towing Co.....Cleveland.
Midland Towing & Wrecking Co., Ltd.... .....Midland, Ont.

TRAPS, STEAM.
Kieley & Mueller .....New York.
Lunkenheimer Co. .....Cincinnati.
Sturtevant Co., B. F., Jamaica Plain..Boston.

TRUCKS.
Boston & Lockport Block Co.....Boston.

TUBING, SEAMLESS.
Shelby Steel Tube Co.....Pittsburg, Pa.

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VALVES, STEAM SPECIALTIES, ETC.

American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co.....Boston.
Crane Co. .....Chicago.
Jenkins Bros. .....New York.
Kieley & Mueller .....New York.
Lunkenheimer Co. .....Cincinnati.
Ross Valve Co.....Troy, N. Y.

VALVES FOR WATER AND GAS.

Ross Valve Co.....Troy, N. Y.

VARNISHES.

Detroit Varnish Co.....Detroit.
Detroit White Lead Works.....Detroit.
Forest City Paint & Varnish Co....Cleveland.
New Jersey Zinc Co.....New York.
Also Ship Chandlers.

VENTILATING APPARATUS FOR SHIPS.

Bayley & Sons Co., Wm.....Milwaukee, Wis.
Sturtevant, B. F. Co.....Boston.

VESSEL AND FREIGHT AGENTS.

Boland, John J.....Buffalo.
Brown & Co.....Buffalo.
Elwell, Jas. W. & Co.....New York.
Elphicke, C. W. & Co.....Chicago.
Fleming & Co., P. H. .....Chicago.
Gilchrist & Co., C. P.....Cleveland.
Hall & Root .....Buffalo.

VESSEL AND FREIGHT AGENTS—Con.

Helm & Co., D. T.....Duluth.
Hawgood & Co., W. A.....Cleveland.
Holmes, Samuel .....New York.
Hutchinson & Co.....Cleveland.
Lester, S. S.....Quebec, Can.
McCarthy, T. R.....Montreal.
Mitchell & Co.....Cleveland.
Parker Bros. Co., Ltd.....Detroit.
Prindiville & Co.....Chicago.
Richardson, W. C.....Cleveland.
Sullivan, D. & Co.....Chicago.
Weeks, F. H.....New York.

WATER GAUGES.

Bonner & Co., Wm. T.....Boston
Lunkenheimer Co. .....Cincinnati, O.

WIRE ROPE AND WIRE ROPE FITTINGS.

Baker, H. H. & Co..... .....Buffalo.
DeGrauw, Aymar & Co... .....New York.
Upson-Walton Co..... .....Cleveland.

WHISTLES, STEAM.

American Steam Gauge & Valve Mfg. Co. ..... Boston.
Ashton Valve Co.....Boston.
Lunkenheimer Co. .....Cincinnati.

WINDLASSES.

American Ship Windlass Co..Providence, R. I.
American Ship Building Co.....Cleveland.
Hyde Windlass Co.....Bath, Me.
Jenks Ship Building Co....Port Huron, Mich.
Marine Mfg. & Supply Co.....New York.

WINCHES.

American Ship Windlass Co..Providence, R. I.
Georgian Bay Engineering Works..... .....Midland, Ont.
Hyde Windlass Co.....Bath, Me.

WOOD WORKING MACHINERY.

Atlantic Works, Inc.....Philadelphia.

WRECKING AND SALVAGE COMPANIES.

Donnelly Salvage & Wrecking Co..... .....Kingston, Ont.
Great Lakes Towing Co.....Cleveland.
Midland Towing & Wrecking Co., Ltd... .....Midland, Ont.
Parker Bros. Co., Ltd.....Detroit.

YACHT AND BOAT BUILDERS.

Bertram Engine Works Co., Ltd..Toronto, Can.
Drein, Thos. & Son.....Wilmington, Del.
Georgian Bay Engineering Works..... .....Midland, Ont.
Truscott Boat Mfg. Co.....St. Joseph, Mich.
Willard, Chas. P. & Co.....Chicago.

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Drein, Thos. & Son.....Wilmington, Del.

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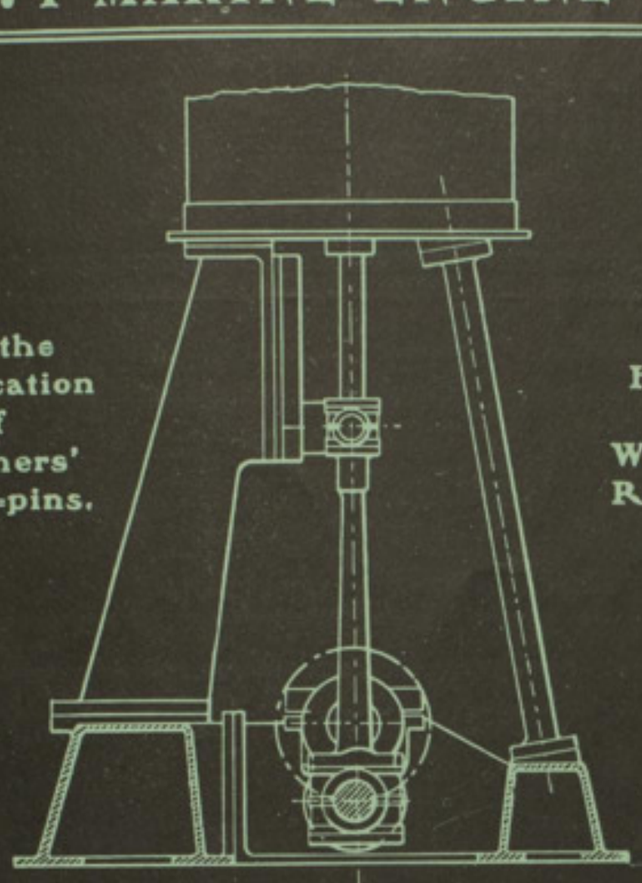

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1628

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LAKE SHORE AND MICHIGAN SOUTHERN RY.

Eastward	Arrive from West	Depart East
No. 18, Southwestern Limited	.....	*1:50 a.m.
No. 22, Lake Shore Limited	*2:12 a.m.	*2:20 a.m.
No. 20, Chicago and Cleveland Exp.	*7:20 a.m.	.....
No. 28, New York and Boston Exp.	*7:40 a.m.	*8:00 a.m.
No. 40, Toledo and Buffalo Accom	†10:00 a.m.	†10:40 a.m.
No. 32, Fast Mail	*11:25 a.m.	*11:30 a.m.
No. 48, Accommodation via Sandusky	†1:40 p.m.	.....
No. 44, Cleveland and New York Spl	...	*3:00 p.m.
No. 46, Southwestern Express	.....	*3:10 p.m.
No. 116, Conneaut Accommodation	.....	†4:30 p.m.
No. 6, Limited Fast Mail	*5:40 p.m.	*5:45 p.m.
No. 26, 20th Century Limited	*7:40 p.m.	*7:43 p.m.
No. 10, Chicago, N.Y. & Boston Spl.	*7:30 p.m.	*7:50 p.m.
No. 16, New England Express	*10:30 p.m.	*10:35 p.m.
No. 2, Day Express	†9:10 p.m.	†9:25 p.m.
No. 126, Norwalk Accommodation	†8:10 a.m.	.....

Westward	Arrive from East	Depart West
No. 11, Southwestern Limited	*3:25 a.m.	.....
No. 7, Day Express	.....	†6:00 a.m.
No. 15, Boston and Chicago Special	*3:05 a.m.	*3:15 a.m.
No. 19, Lake Shore Limited	*7:05 a.m.	*7:15 a.m.
No. 23, Western Express	*10:30 a.m.	*10:35 a.m.
No. 29, Southwestern Special	‡11:10 a.m.	.....
No. 33, Southwestern Express	*12:25 p.m.	.....
No. 133, Cleveland and Detroit Exp.	...	*12:45 p.m.
No. 47, Accommodation	†11:00 a.m.	†3:00 p.m.
No. 141, Sandusky Accommodation	.....	†3:10 p.m.
No. 43, Fast Mail	*4:35 p.m.	*4:40 p.m.
No. 127, Norwalk Accommodation	.....	†5:10 p.m.
No. 37, Pacific Express	*6:50 p.m.	*7:20 p.m.
No. 3, Fast Mail Limited	*10.50 p.m.	*10:55 p.m.
No. 115, Conneaut Accommodation	*8.30 a.m.	.....

*Daily. †Except Sunday. ‡Except Monday.

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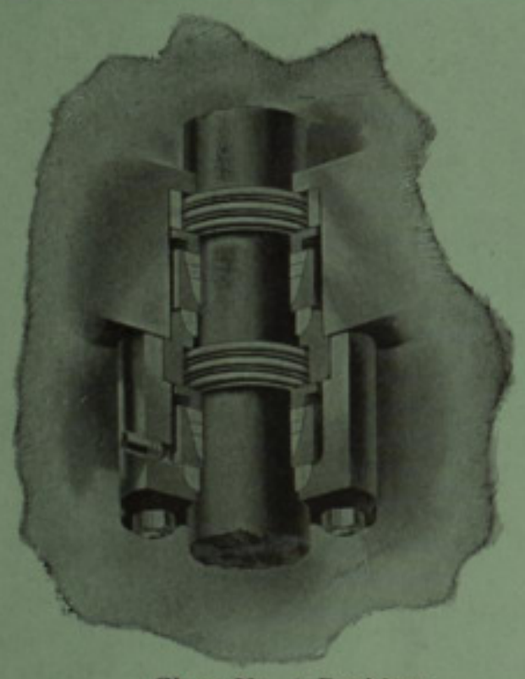

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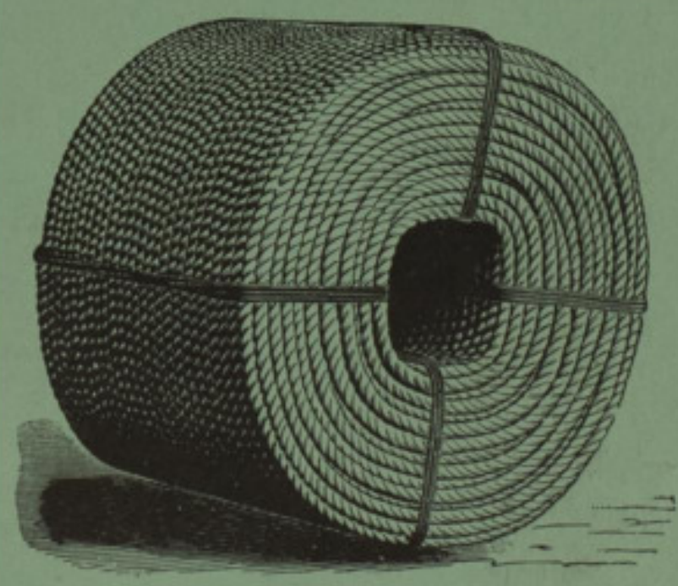

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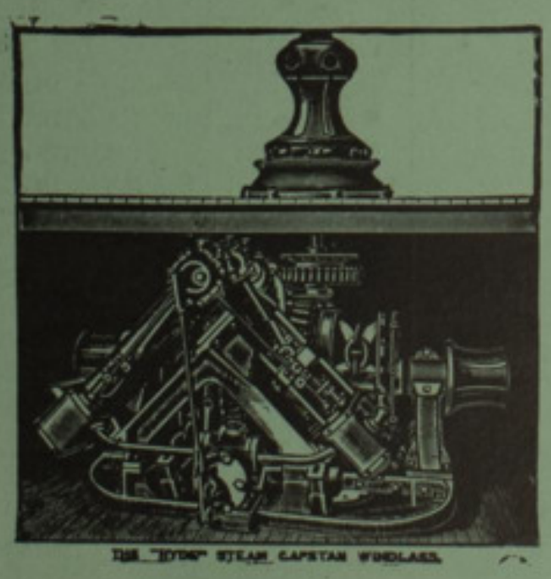

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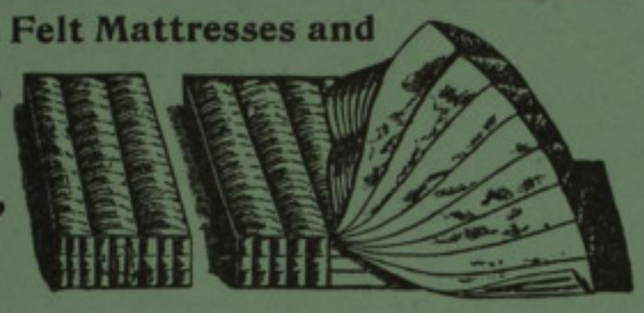

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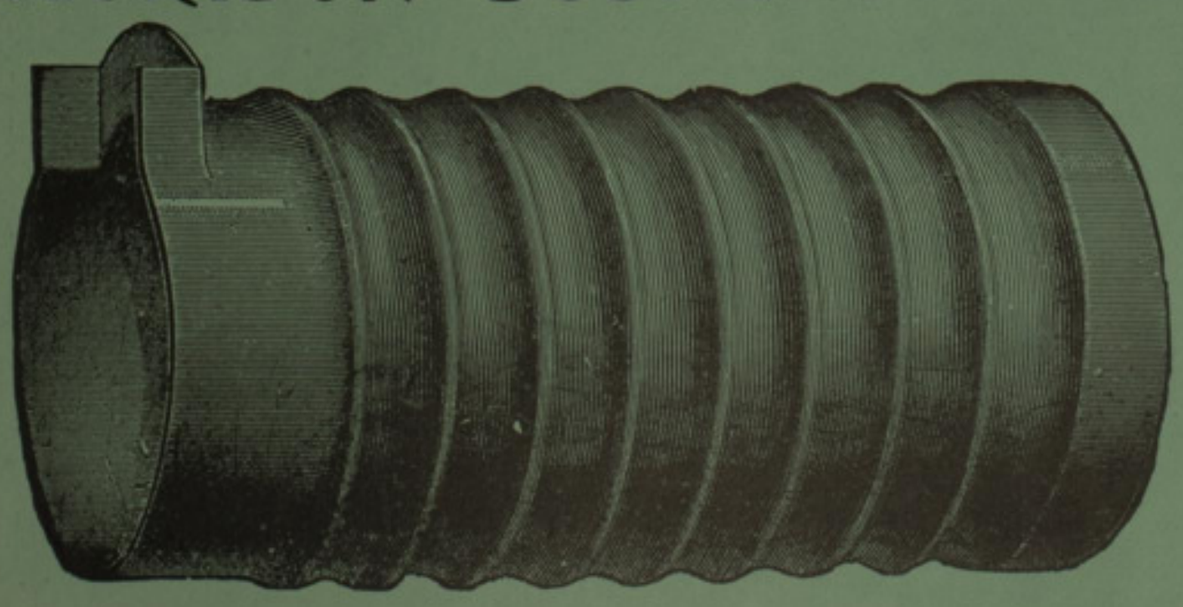

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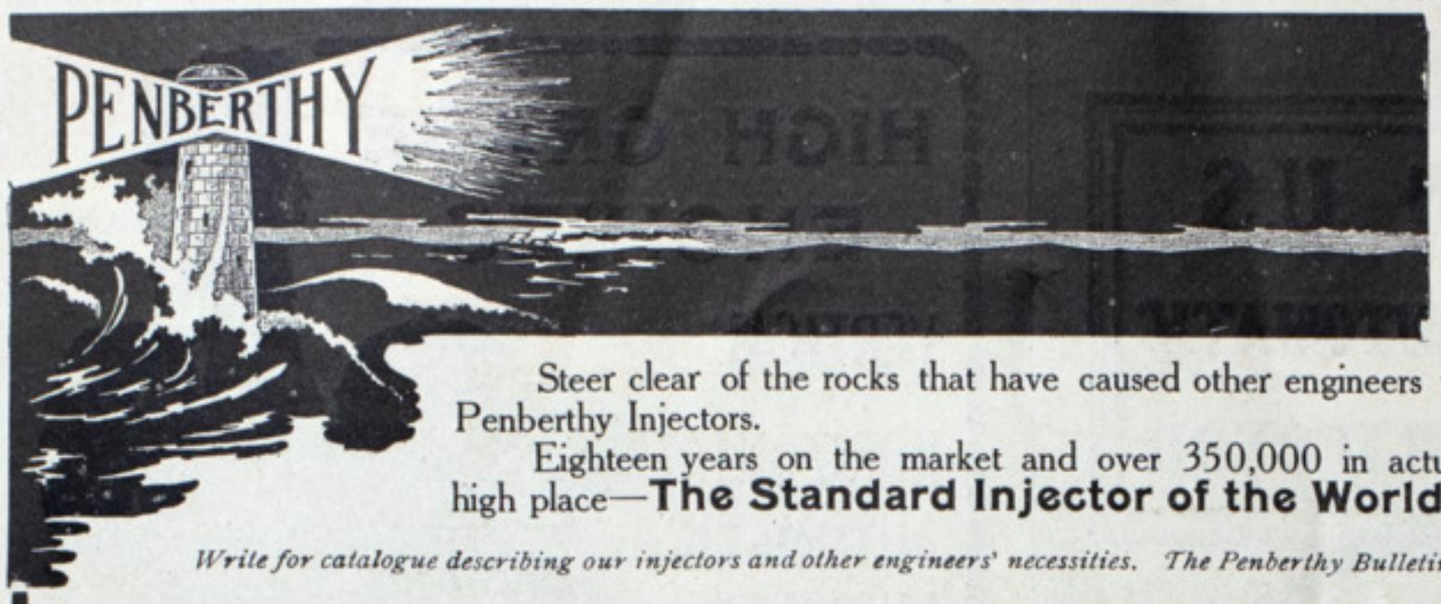

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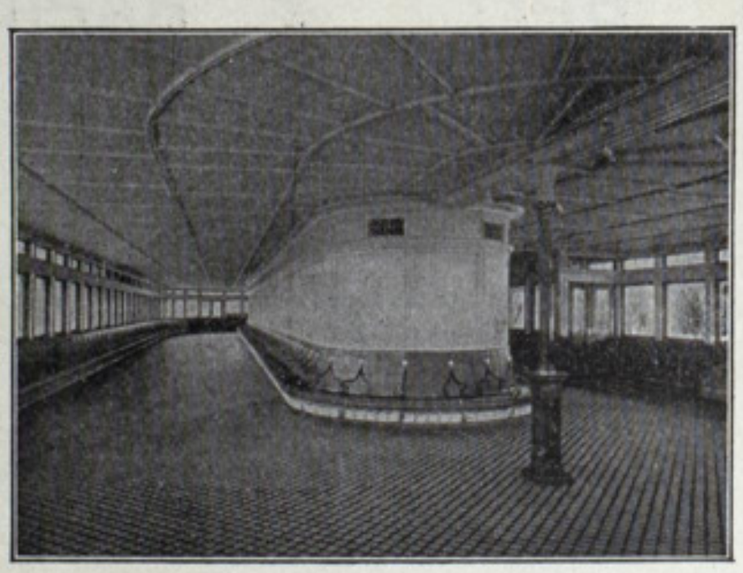

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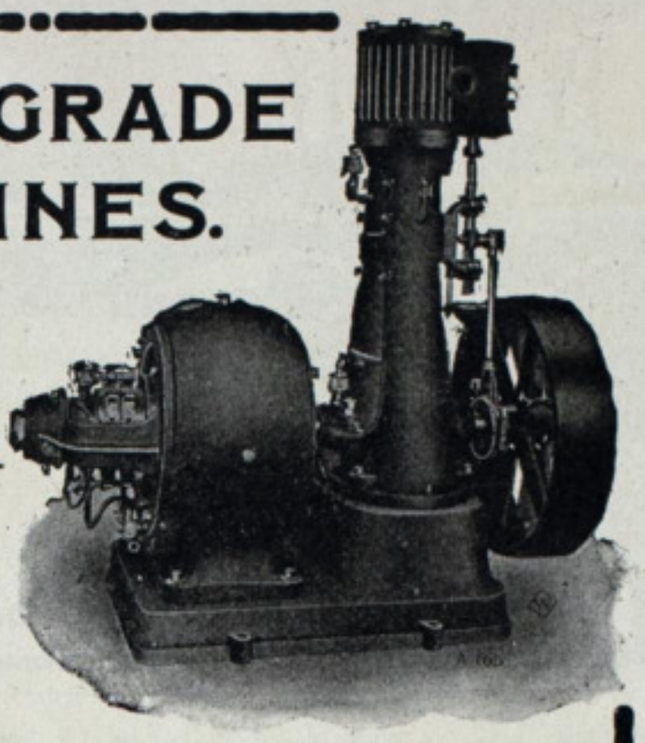

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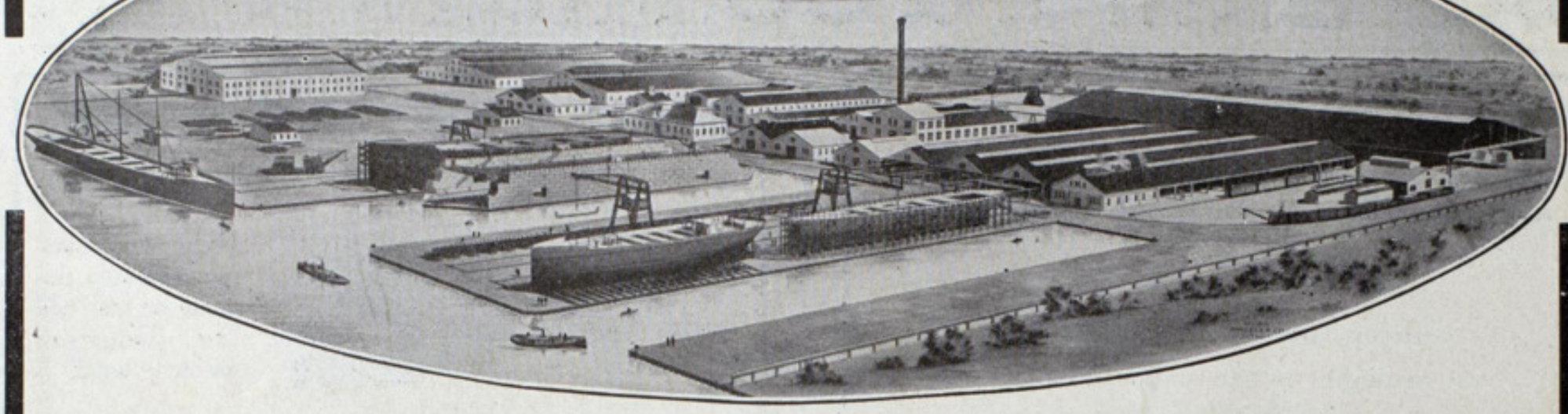

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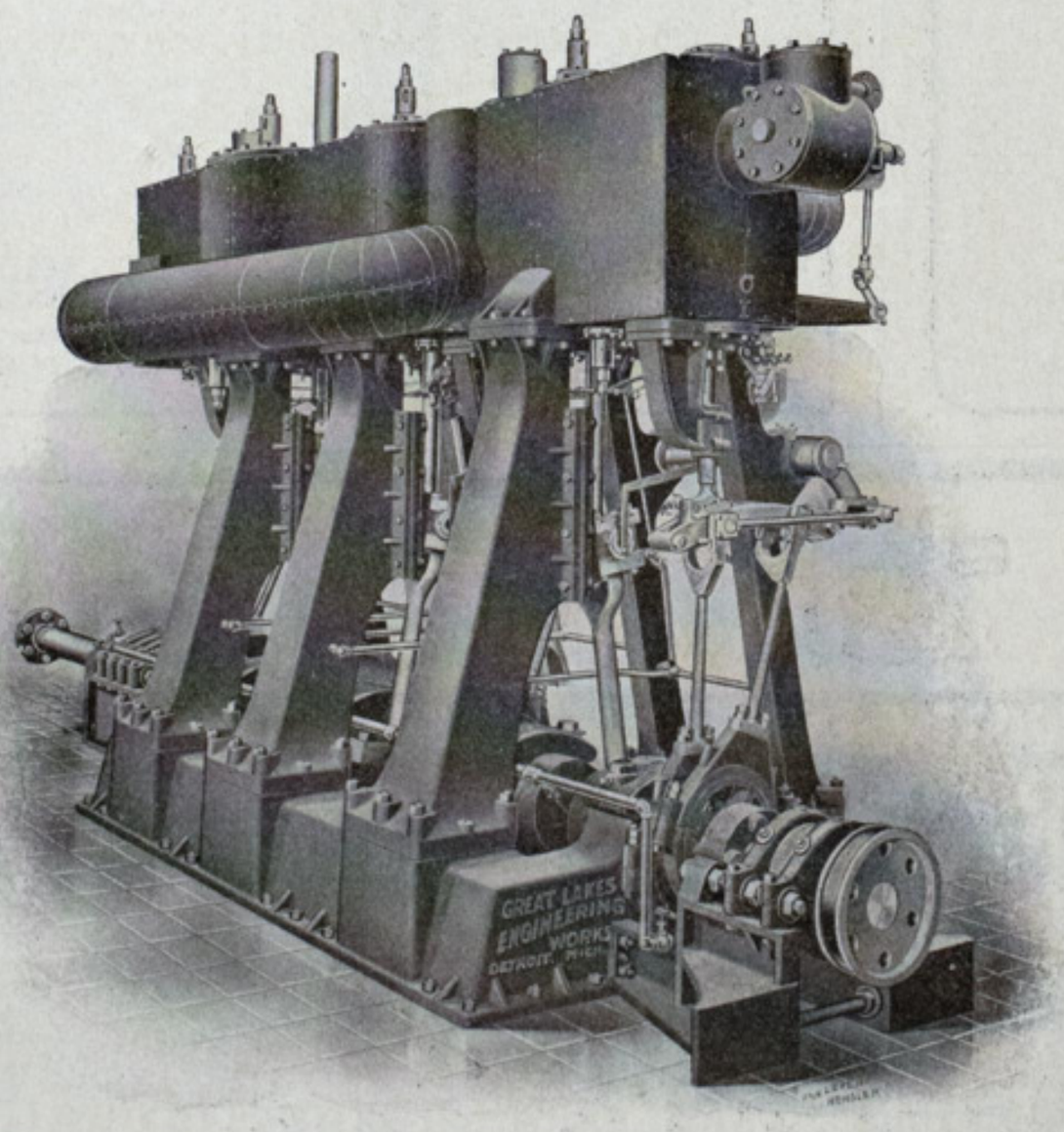

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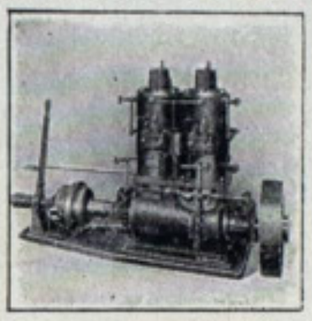

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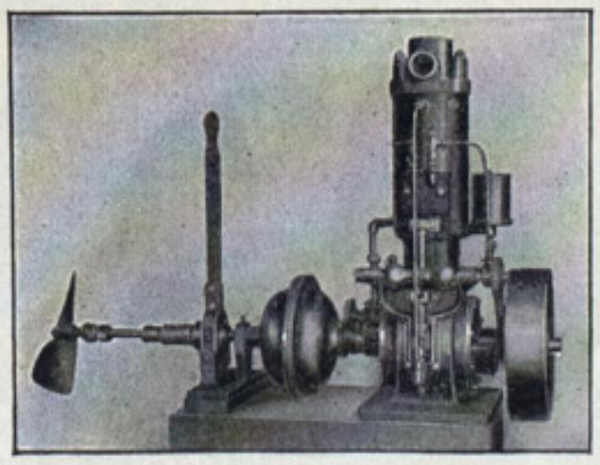

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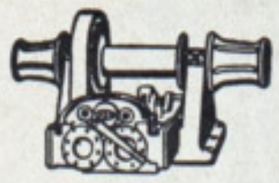

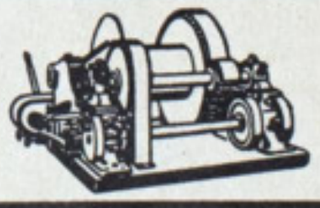

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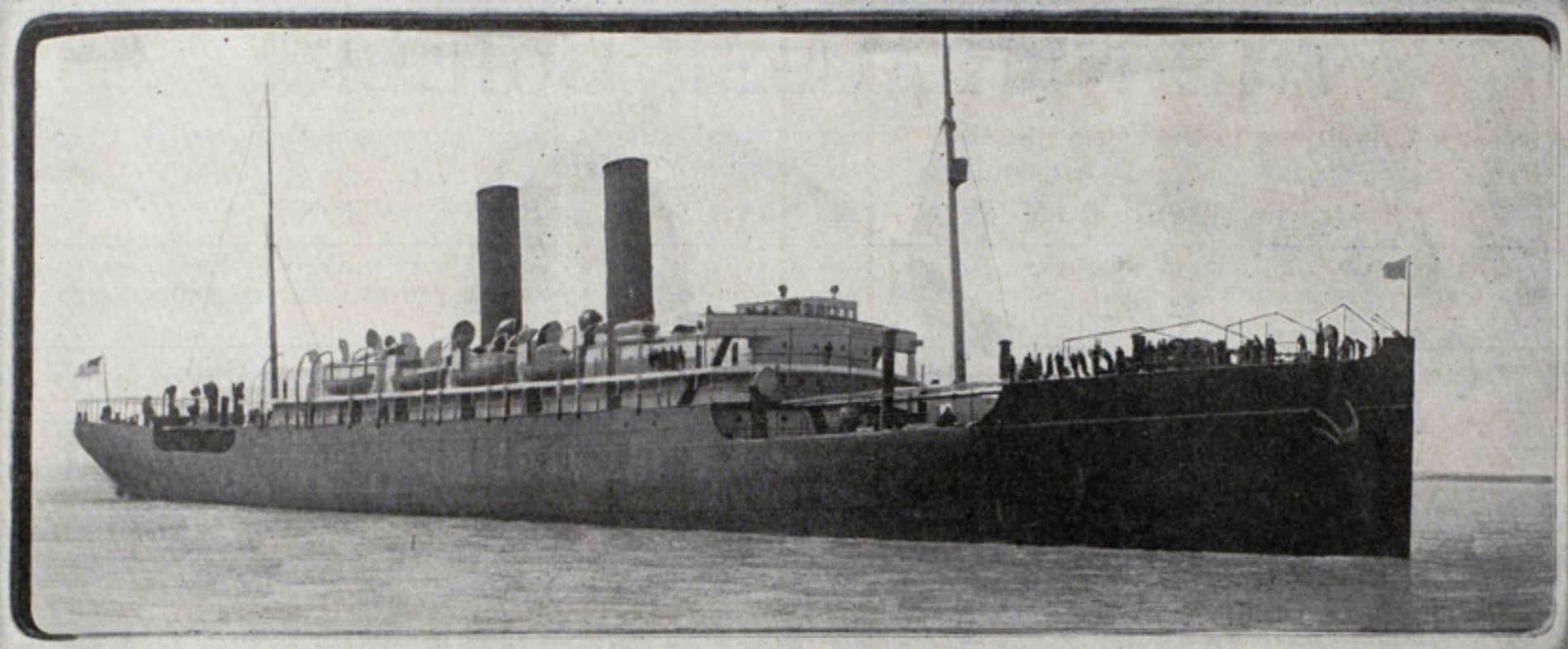

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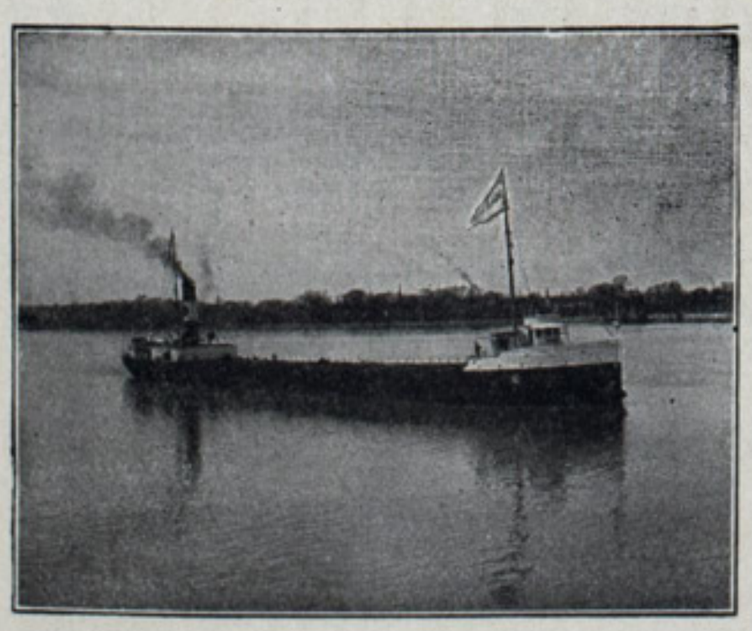

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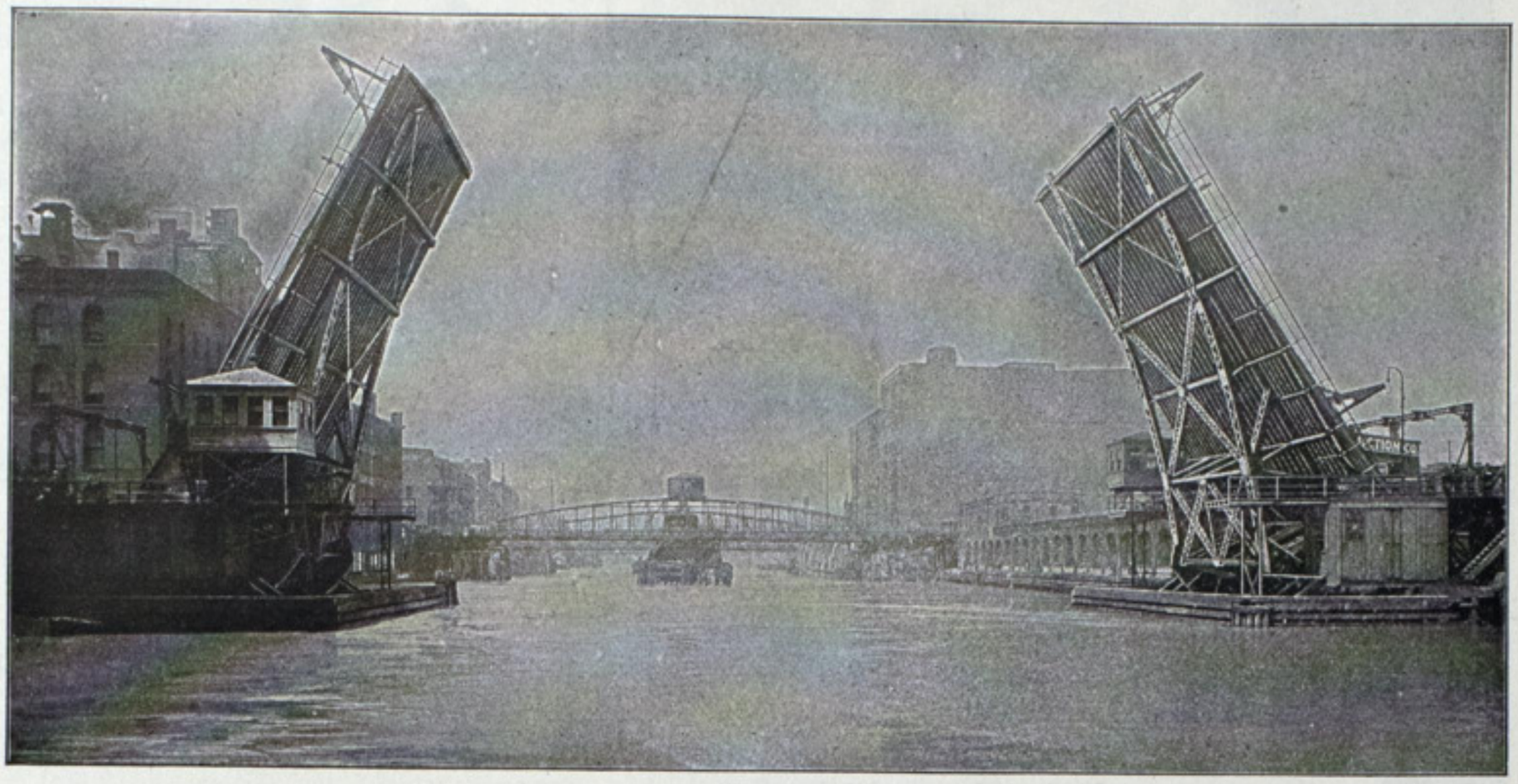

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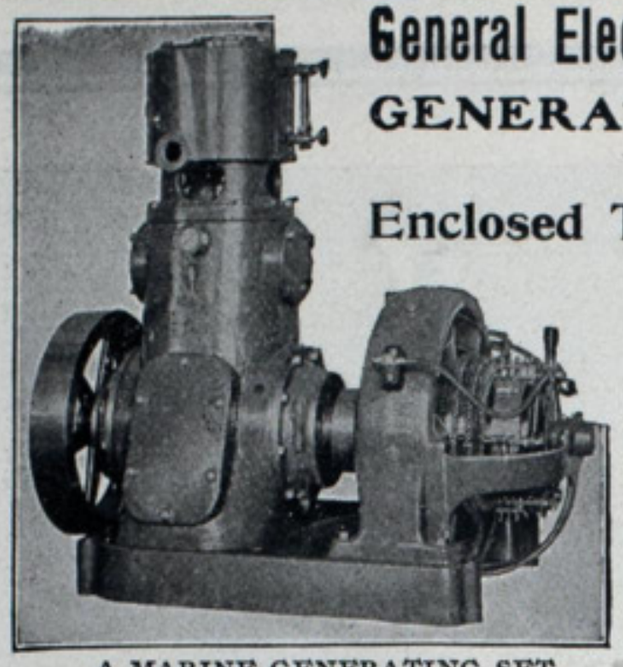

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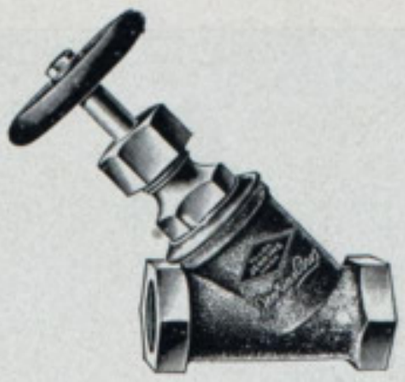

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